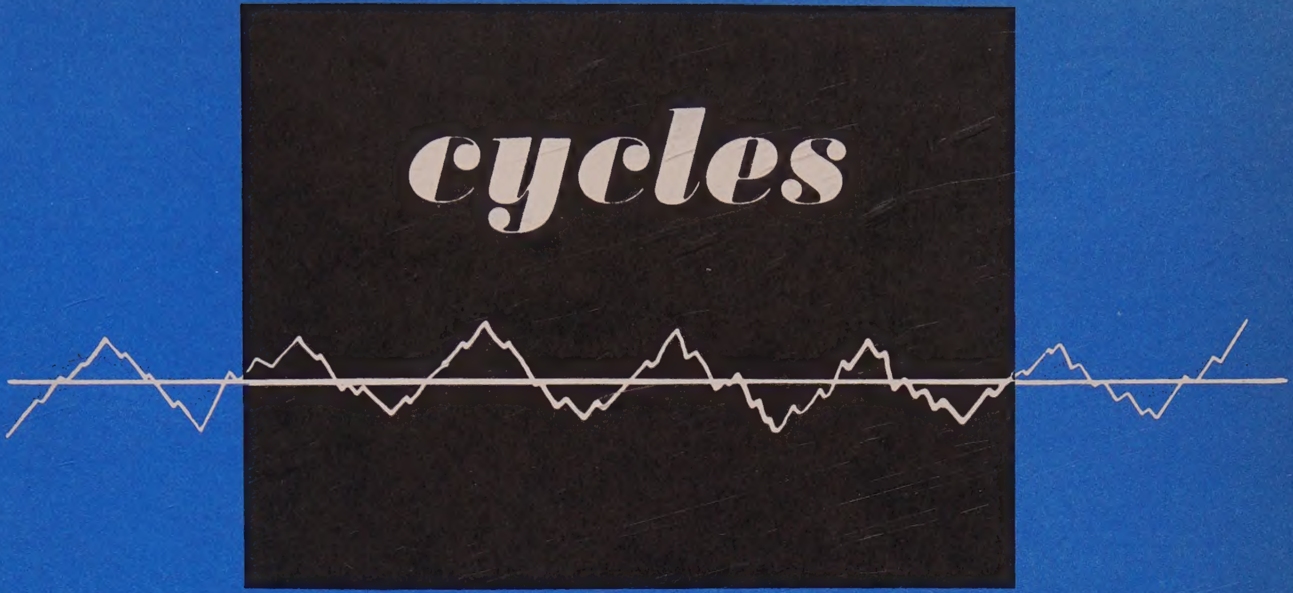
cycles



May–June 1958

FOUNDATION FOR THE STUDY OF CYCLES
New York, New York

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THE OFFICIAL BULLETIN OF THE FOUNDATION FOR THE STUDY OF CYCLES

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Program

Our program is (1) *to collect* as many examples as possible of rhythmic fluctuations in all fields of natural and social science, (2) *to measure* each of these rhythms with the greatest possible accuracy, (3) *to record* the latitude, longitude, wave length, wave shape, timing, and strength of each cycle in such a way that any qualified worker can reproduce the work and obtain the same results, and so that he can, if he wishes, take issue with the methods used by the worker to isolate, definitize, and evaluate ne cycle, (4) *to stimulate* and help others to do these same things, (5) *to print* the results of all this research, (6) *to arrange*, collect, catalog, and group the cycles thus discovered and definitized, (7) *to discover the laws* which govern the operation of cycles, and (8) *to deduce* the *cause* or causes of cycles.

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EDWARD R. DEWEY, DIRECTOR

THE DIRECTOR'S LETTER

Dear Members:

You really are putting your shoulders to the wheel! The results are apparent financially, and in the quality of our reports.

Your larger and more numerous contributions of money and your improved renewal rate enabled us to make real financial progress in 1957. (Details in July.) We can now do more research and can give you larger and better reports.

Your suggestions have improved the typography, lay out, and contents of the reports.

You have busied yourselves to form local chapters. (See Jack Dorland's helpful article on page 131-132.)

Your offers to assist in writing the reports have been magnificent.

And finally, wonder of wonders, you are beginning to help us to extend our circle! Let me quote from some recent letters:

Oklahoma

Here is one from a man in Oklahoma:

"As one of your older members, dating back to 1951, I want to congratulate you on the progress you have made since your visit to Tulsa over a year ago.

"The new format of *Cycles* should attract many new members if they have a chance to see and feel the benefits of the years and years of research that are now proving their value to human progress and understanding.

"I just received one of your circular mailings and got an idea. I called a few friends, with whom I have discussed cycles in the past, and suggested that I come and show them how they could get a better idea of what to expect in the next few years, based on what has happened in the last 2500 years, than on the words of a lot of word-twisting politicians.

"If you will send me about a dozen sets of the promotion letters, I will deliver them personally and sell the idea.

"If this proves effective, it might stimulate some activity on the part of many other members."

Detroit

A man in Detroit writes:

"My own small contribution to the success of the Foundation might possibly be in adding to the membership and subscription list for the "cycles" magazine. . . . .

"Hence, it occurred to me that if you would care to send me up to a hundred copies of *Cycles*, I could write a covering note concerning the magazine and the Foundation and ship that with a sample copy of *Cycles*—any recent copy would do—into the envelope of a selected number of those on my mailing list. . . . ."

Another man, also in Detroit (quite a place, Detroit!), writes:

"After studying your report of Income and Expense, 1956 on page 267 of the October 1957 issue, I noted that the cost of getting new members is much too high in relationship to the dues from New Members or even the total dues. It then occurred to me that I might be of some assistance to follow up on delinquent dues in the Detroit area if you would give me the names, addresses, telephone numbers or company affiliations. And if you mailed me about two dozen application forms, literature and about the same number of one of your past issues that I could give as samples I might be able to obtain some new members from amongst my business acquintances, members of the Detroit chapter of the National Society of Business Budgeting, or the National Association of Accountants. (Both are National Organizations and something could be done on a National scale.)"

An Idea

Do these letters give *you* an idea? Wouldn't *you* like to do something of the same sort? If so, please write me. I assure you your help will be most appreciated.

Honor Roll

In this connection a member from Toronto writes: "How about an Honor Roll for every member who gets two new members (or gives two gift memberships) in 1958?" This is a wonderful idea. See the end of this letter for names we know about. If you belong on the Roll let me know the names of the persons you brought in and it will be a pleasure to add your name to the list.

I think our Foundation is showing signs of real vitality, don't you?

Depression Ahead?

I'd like to call your attention to an important article called "What's Ahead for Manufacturing Production—A Long-Term View" printed as the lead story in this issue of *Cycles*. It throws light on what's ahead for business.

In a nut-shell, this story tells you of two important cycles that have been isolated from manufacturing production figures. If these cycles—36 and 50 years long—continue, the rapid advance of the last few years is over for a while. The advance is due to resume in the late '70's.

Because these two cycles are so strong and the underlying growth trend is still so vigorous, I do not fear a *major* depression (like that of 1932) at the present time. We could have a sizable shake out, but I cannot see anything catastrophic for the near future. In 1970-1980 however the situation may be quite different.

I urge you to read this article and, in spite of its scientific qualifications, to take it quite seriously to heart.

Natural Science Cycles

We are devoting several pages of this issue—and plan to devote a number of pages of future issues—to natural science cycles.

There are several reasons for this inclusion. First, I want to impress upon you that rhythmic cycles are well nigh universal in nature. Second, natural science cycles are usually much simpler than human cycles, and are therefore easier to study. Third, when the wave-lengths of the cycles in natural science phenomena are the same as the wave-lengths in social science phenomena, we have reason to believe that we are dealing with something very fundamental indeed.

Unless you have studied the subject, you would be amazed at the universality of rhythmic cycles. They are present in every aspect of human life. The abundance of birds, fishes, insects, snakes, mico-organisms, and mammals fluctuate in rhythmic cycles. The yields of crops are rhythmic. Tree rings—evidence of growth—are wide and narrow in rhythmic cycles. Water levels in our rivers and lakes are rhythmic. Earthquakes recur at rhythmic intervals. So do volcanic eruptions. Sedimentary rock deposits are first thick and then thin in layers that evidence rhythm. All aspects of weather show rhythmic cycles, albeit very complicated ones. Even the stars pulsate rhythmically.

For the most part, these natural science cycles are simpler than their social science counterparts. That is, cycles of one wave length more fully describe the natural science behavior. Moreover, some of the natural science cycles are simply amazing in their regularity. This makes them more convincing—less likely to be the result of chance.

And finally, it is the identity of wave length between social and natural science phenomena that is the chief reason for the separate study of cycles. There is nothing very remarkable in the fact that there is an 11-year cycle in stock prices and in manufacturing production. You would *expect* that the one would go up and down with the other. However, if weather *and* earthquakes *and* sunspots *also* have 11-year cycles of *exactly* the same wave length which come at about the same time you are confronted with something you would *not* expect. If you find something of the sort you can be pretty sure that you have blundered onto something pretty much at the heart of things.

That is why, in cycle study, natural science cycles are even more important than social science ones. It is the reason for the paradox that, as in *Alice Through the Looking Glass*, if you want to know more about *social* science cycles, you should turn your back on them and go in the other direction! The study of *natural* science cycles may teach you more about *social* science cycles than will the study of social science cycles themselves.

Cordially yours,

Edward R. Dewey

Director

Honor Roll for 1958

(Persons who have given or secured two or more memberships during the year. May we add your name?)

Howard R. Alton, Jr.
Robert Gries
John Hornung
Charles Haynes

P. S. The report, which you will get a month from now, will contain the story about cycles in the stock market.

Research by Staff

WHAT'S AHEAD FOR MANUFACTURING PRODUCTION?

A LONG TERM VIEW

BY EDWARD R. DEWEY

I am often asked, "Is the present decline in business the beginning of a major depression like the one we had in the '30's? Is it going to be relatively minor like the one of 1937? Or is it going to be a mere ripple like the one of 1954?" This article will attempt to throw light on this question.

The Answer

If the 36- and 50-year cycles isolated from the manufacturing production figures from 1810 to date have significance, and if they continue, the quantity of goods manufactured in the U. S. A. will (barring war) more or less stabalize for the next fifteen years or so. This situation could bring on a major depression in the '70's, but, by itself, would not seem likely to bring on a major depression at the present time.

The 36-Year Cycle

The 36-year cycle has a typical strength of 21% at time of ideal crest. Ideal timing puts a crest at 1955. This cycle is thus downward at the present time.

The 50-Year Cycle

The 50-year cycle has a typical strength of 19% at time of ideal crest. Ideal timing puts its last crest at 1953. This cycle is thus downward at the present time, too.

Both cycles seem to be zigzag in shape.

The isolation of these two cycles was fully discussed in *Cycles* for January and February 1954 and need not be reviewed here. It is enough to say that a re-computation based on the new Federal Reserve Board Index (1947-49 = 100) changed neither the amplitude nor the timing of either of these two cycles.

The Diagrams

The 36- and 50-year cycles are diagrammed as Curves A and B of Fig. 1 shown overleaf on pages 114 and 115. Immediately below Curve B is a diagram of the combination of Curves A and B. It is called Curve C. Below Curve C, extending from lower left to upper right, is the underlying growth trend of manufacturing production, Curve D with the combined 36- and 50-year cycles wrapped around it as Curve E.

(For the technician, I might say that the growth trend is a Gomperz curve fitted to the values of the index, 1863-1957, after adjustment for the 36- and 50-year cycles.)

On pages 116 and 117 I have shown Curve E superimposed upon the actual F. R. B. index figures, extended backward by means of an index of my own construction, which I have equated to it. The fit is quite good.

The Pros and Cons

The credence we should give to the projection depends largely upon the significance and dependability of the cycles. Are there really cyclic forces at work in manufacturing production that alternately stimulate and retard activity at these time intervals? Or do we merely have some accidental variations from a smooth growth curve which happen to be *describable* by a combination of two regular cycles? No one knows.

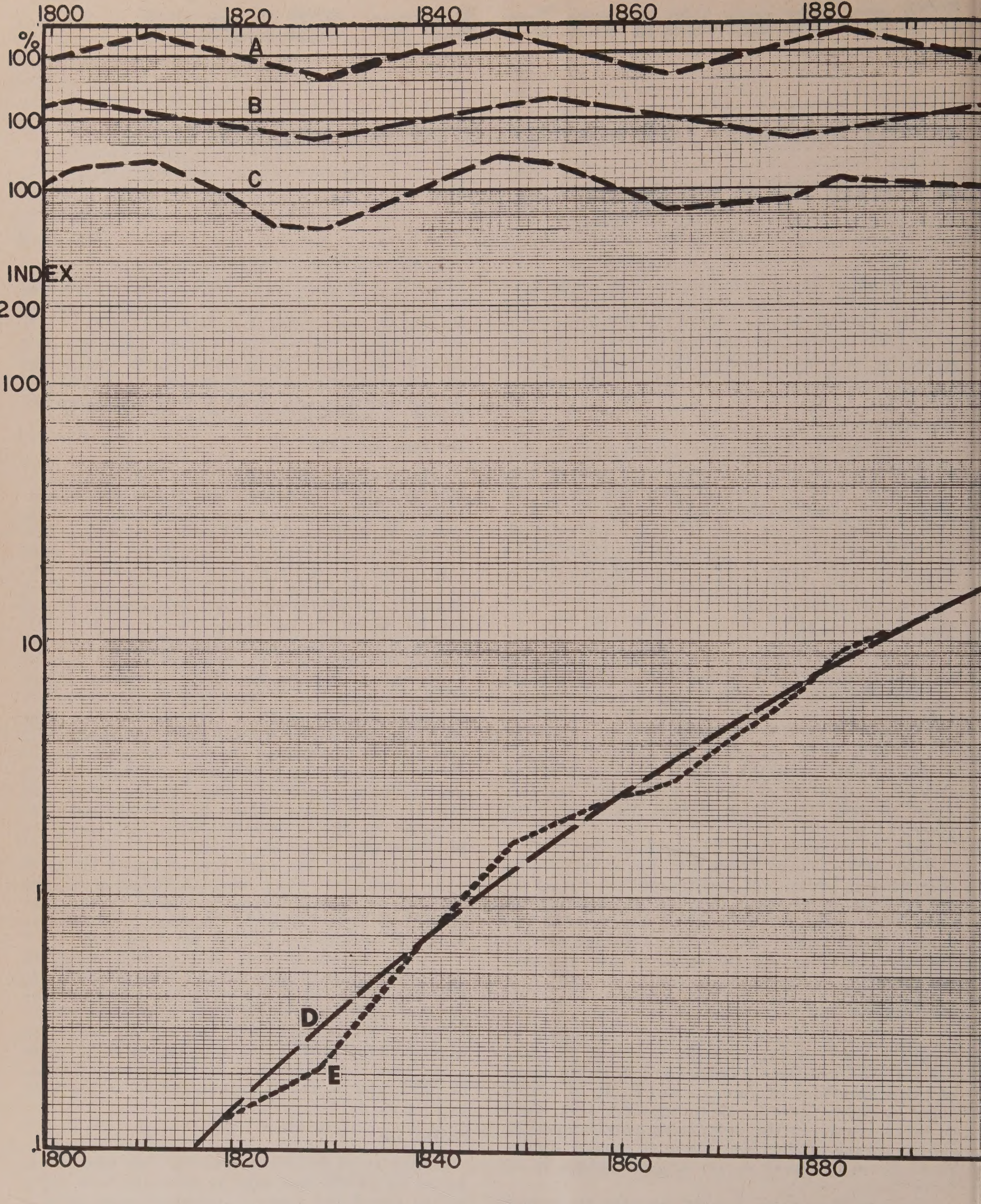
The trouble is, our figures do not go back far enough to enable us to get enough repetitions of these waves. The 36-year cycle has had an opportunity to repeat but 4 times, the 50-year cycle but 3 times, in the available figures. Moreover, the fact that the two cycles and the trend pretty well describe the behavior of the past 150 years, as far as it is known, does not mean too much. If you combine enough cycles, you can reproduce any irregular curve to any degree of correspondence you choose. The 36-and 50-year cycles must therefore be judged upon their own merits.

Cycles about 36 years long are well known in many phenomena. They have extended over long periods of time and have continued to manifest themselves after discovery. However, a comparative study of these cycles has not yet been made.

The half-century cycle is also well known and has been discussed many times in these pages. In the series where it is clearest and has been present over the longest period of time (wheat prices) it seems to be 54 years long. Here, in manufacturing production, it seems to be 50 years long. This difference may be reconciled in time, or there may be two different cycles in the half century range.

Evaluation

There is *no question whatever* but that manufacturing production acts as it would have acted if its growth had been in accordance with orderly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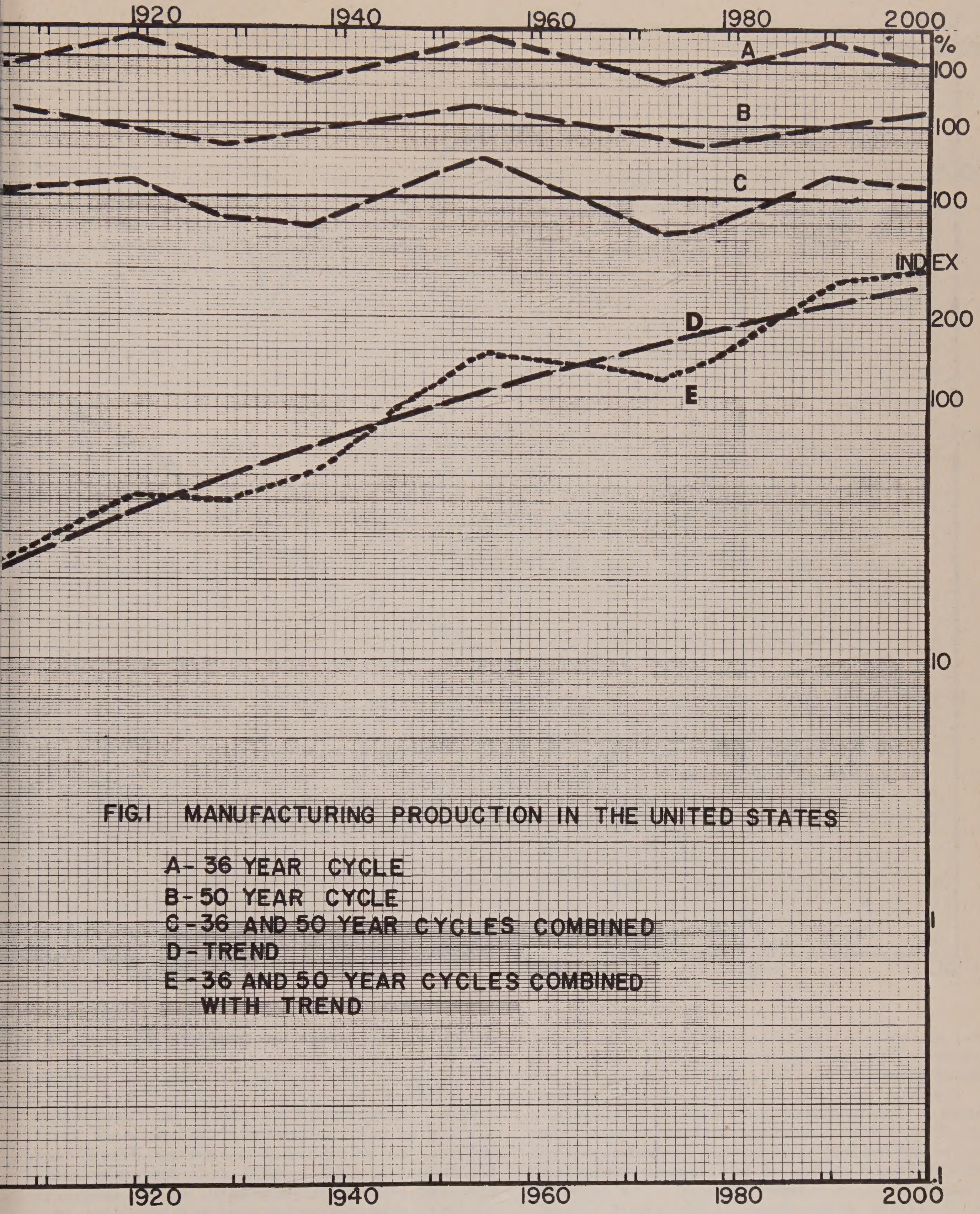
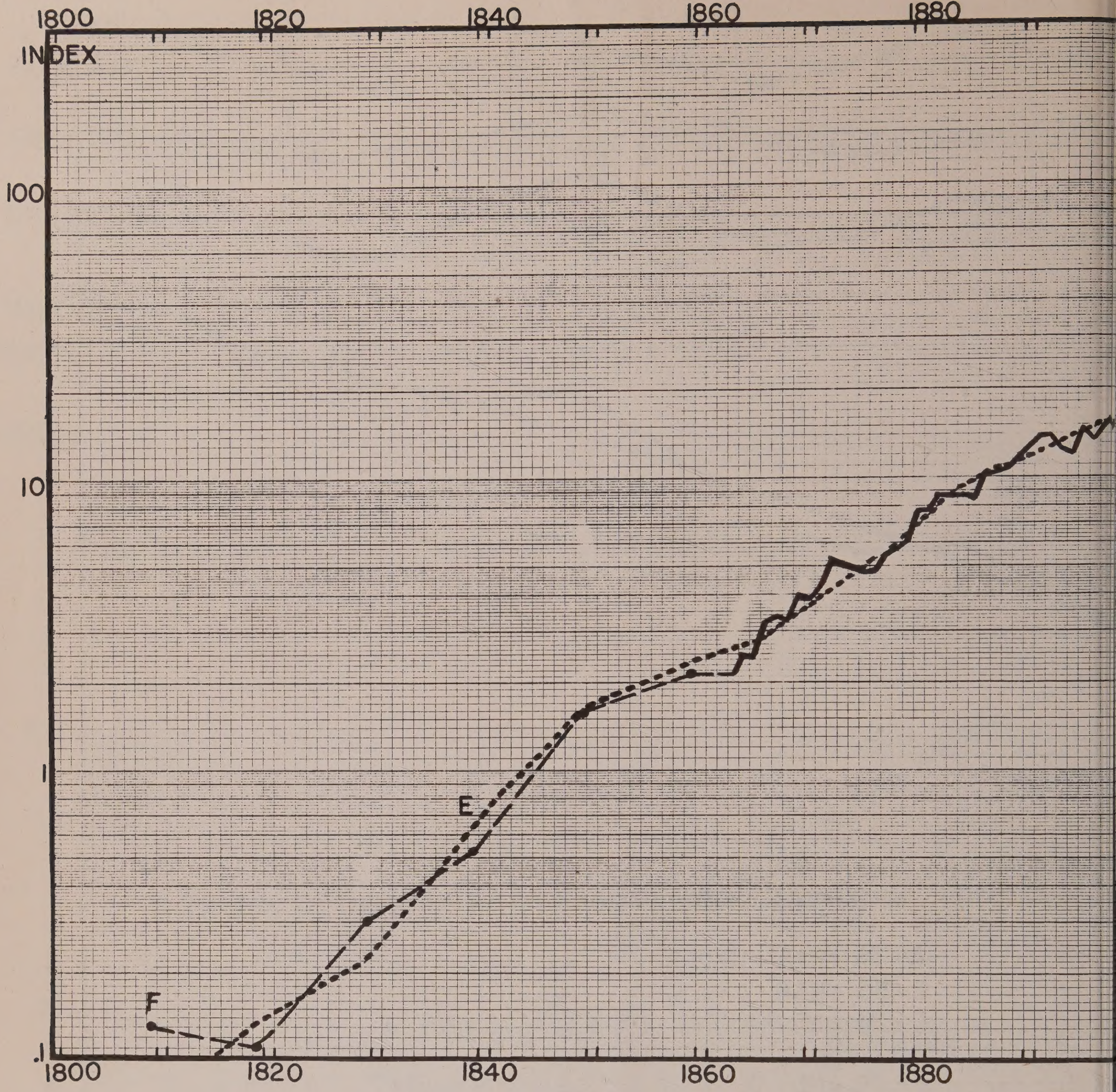


FIG. I MANUFACTURING PRODUCTION IN THE UNITED STATES

A- 36 YEAR CYCLE
B- 50 YEAR CYCLE
C- 36 AND 50 YEAR CYCLES COMBINED
D- TREND
E- 36 AND 50 YEAR CYCLES COMBINED
WITH TREND



law, alternately accelerated and retarded by cyclic forces of 50- and 36-year periods respectively, acting simultaneously.

But that does not prove that there were such forces. The behaviors may have come about by accident. I may be merely postulating two regular cycles and a trend to create an irregular pattern which fits a series of accidental variations brought about by I know not what. This could be so. I *believe* we are observing the effect of real forces—forces which will continue and, barring a major war, will create the framework of our future, but I do not *know*.

The Future

The combination of 36- and 50-year cycles and trend goes gently downward from now until 1973. However, let me emphasize two things. First, that the decline is mild--by 1973 it is down only to the levels of 1950, eight years back. Second, as I said in 1954, this projection does not mean that production will be going down *year-by-year* during this

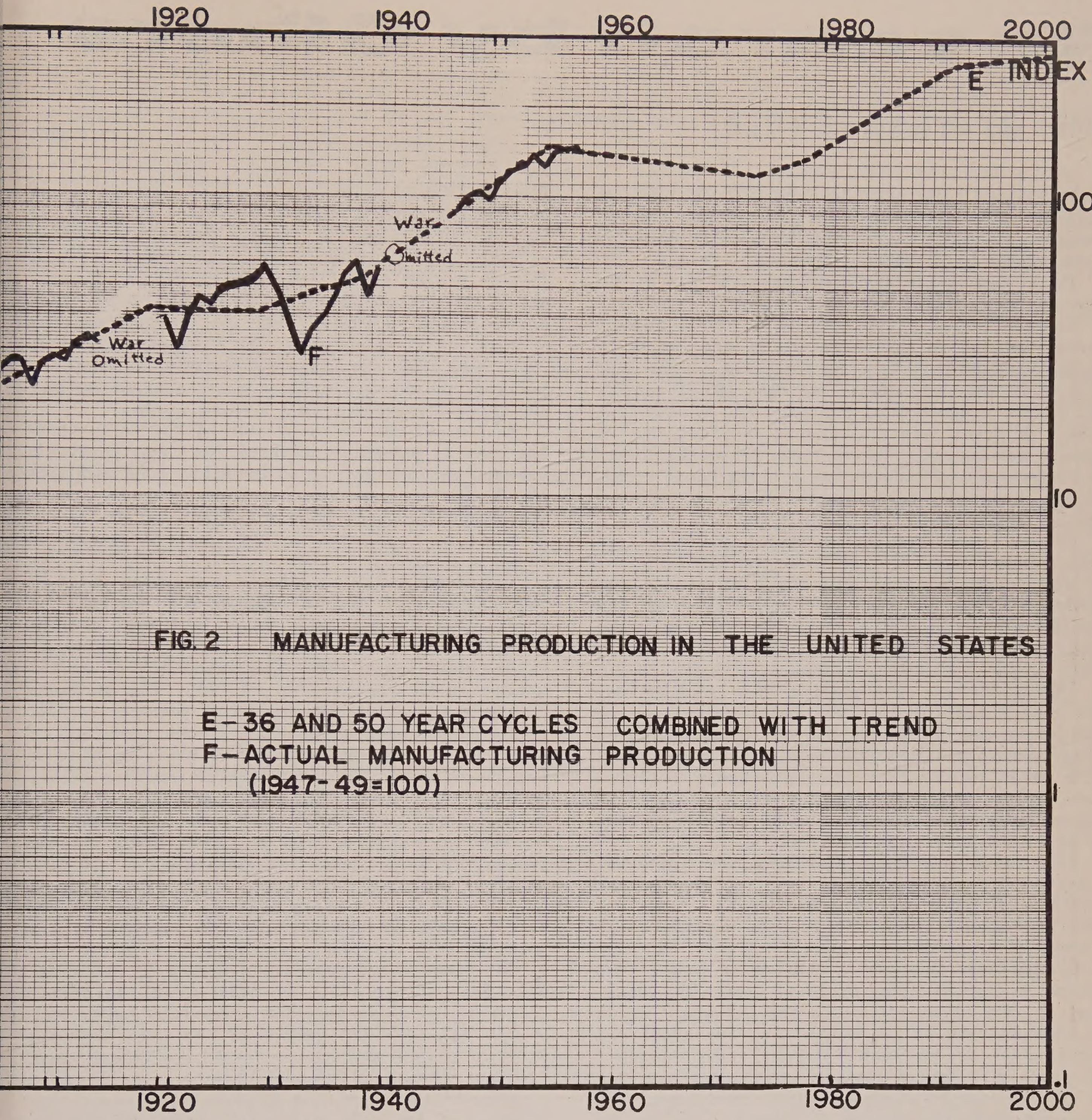


FIG. 2 MANUFACTURING PRODUCTION IN THE UNITED STATES

E—36 AND 50 YEAR CYCLES COMBINED WITH TREND
F—ACTUAL MANUFACTURING PRODUCTION
(1947-49=100)

period, even if both the cycles continue and the trend has been correctly determined. Far from it! We will have a succession of ups and downs. Some of the "ups" may very possibly be above present levels. Some of the "downs" may be eased or limited by governmental action. But, and these are the things to remember, the projection says, one, that any depression in the immediate future is likely to be relatively minor. two. that the booms are due to have a progressively harder time of it, and three. barring adequate governmental action to the contrary, sometime during the 1970's we are due to have the makings of a really major depression.

For the immediate future, as I told you four years ago, these two cycles do not portend any major catastrophe. The danger is more from inflation due to political pandering than from the cycles.

Research by Others

THE 37-YEAR CYCLE

BY EDWARD R. DEWEY

If you are interested in long-term cycles, you should become acquainted with the work of H. W. Clough (pronounced *Cluff*), for many years meterologist of the U. S. Weather Bureau.

The 37-year cycle discussed here, is one of the many cycles reported upon by Clough.

Clough finds a 37-year cycle in the following phenomena: (a) in the variation in the length of the sunspot cycle (which is sometimes longer than 11.1 years and then shorter and then longer again), (b) in the frequency of auroras, (c) in the frequency of severe winters, (d) in the frequency of Chinese earthquakes, (e) in wheat prices expressed as percentages of secular (i. e. long term) trend, (f) in the growth per year of Arizona pines, and (g) in the floods of the river Nile.

You will remember that a harmonic analysis of cotton prices from 1731 to 1940 disclosed a cycle of 36¾ years in those figures also (see "Long Cycle in Cotton Prices" on page 17-19 of *Cycles* for November 1950 and "Multiple Harmonic Analysis Applied to Cotton Prices, 1731-32 to 1939-40" on pages 20 to 26 of the same issue.

The difference of a quarter of a year between the length disclosed in my report on cotton and the length used by Clough has no significance, as Clough does not attempt to determine the length of this cycle closer than to the nearest integral year, and my work is subject to the limitations of the periodogram as discussed in an article by that title in the report for June 1951.

Also there is a cycle of this general order of magnitude in common stock prices, but whether the length is 37 years or some other length has not yet been determined. An article on the subject is in process of preparation.

Clough finds that the 37-year cycle length also varies in its turn in a cycle of about 300 years. That is, for about 150 years the "37-year" cycle is shorter than 37 years and then for about 150 years it is longer than 37-years. This tendency for certain cycles to vary in length in a rhythmic way is familiar to all persons who have done cycle research with long series of figures, and is one reason why exact determination of cycle length is so difficult and is so often specious.

The results of Clough's work in respect to the 37-year cycle are summarized in Fig. 1 on the page next following. This chart is reproduced from a paper printed in the April 1933 issue of the *Monthly Weather Report*.

As you can see, the time scale on this chart runs from year 200 A.D. to 1930, a span of 1730 years.

The top curve represents the time span from sunspot maxima to maxima, based on best estimates available to Clough at the time his work was done. Thus the first point, at 311 A.D., is put at 10 because the sunspot maximum estimated to be at 311 is ten years after the sunspot maximum estimated to be at 301. The next point on the curve (at year 323) is placed at 12 because year 323 is 12 years after 311 and so on across the page to the last point, which indicates that the sunspot maximum at 1928 was 11 years after the sunspot maximum of 1917. Note that the scale is inverted so that the peaks on the curve represent short sunspot cycles; the troughs represent long sunspot cycles.

As you can see by inspection of the curve there has been an irregular tendency for these intervals between sunspot maxima to be first long and then short. The average distance between the crests chosen by Clough is 37.4 years per cycle. By the method of least squares the typical length is found to be 37.5.

The second curve represents a smoothed index of the frequency of auroras from 385 A.D. to 1625. In this instance the crests chosen by Clough average 37.2 years.

The next curve shows the frequency of earthquakes in China from 200 to 1865. The 44 peaks chosen by Clough average out to 37 years per cycle.

The fifth curve shows wheat prices from 1265 to 1930 expressed as percentages of their secular or long term trend. The cycle length for this series averages 37.5 years.

The next curve shows the growth per year of Arizona pines from 1460 to 1870. Using crests chosen by Clough the cycles average 37.9, but I do not feel that, in the absence of earlier figures, we are safe in accepting 1410 as the date of the first crest. If the counting is started at the crest of 1495 the length averages 37.0 years.

The final curve represents floods of the river Nile from 625 to 1470. In this curve the crests chosen by Clough average 36½ years from end to end.

The lines at the bottom of the page show the dates of the various maxima joined, as Clough says, "to show interrelations and lags."

Clough was limited in his research by the inadequacy of the data with which he had to deal. It is possible that the additional work done in recent years by Schove and others (see "Sunspot Maxima Since 649 B.C." by D. Justin Schove, in *Cycles* for February 1957, p. 53) would enable someone following in Clough's footsteps to refine his work and to throw additional light on the existence and regularity of this 37-year cycle in sunspot intervals and frequency of aurora.

Also we now have more precise measures of the growth per year of Arizona pines than were available to Clough and have these records back to 54 B.C. (see Basic Data Bulletin Number 2 of the Foundation for the Study of Cycles published as supplement to *Cycles* for May 1951).

Likewise, in the years since Clough's paper was written, there have been developments in the technique of cycle analysis which, if applied in the present instance, might shed further light on this intriguing correspondence of cycle length.

Finally it seems to me that Clough has needlessly handicapped himself by the assumption that solar phenomena must necessarily precede terrestrial phenomena. My own observations in regard to this matter are not extensive enough to be conclusive, but my work has provided a very definite hint that crests of terrestrial cycles frequently precede crests of solar cycles of the same length.

Recognition of this possibility would enable the interrelationships and lags shown by Clough to be less farfetched than they may seem to many people.

I am sure Clough would be the first person to concede that further work in respect to this cycle should be undertaken. However, regardless of this fact, it seems evident that in these figures and this work by Clough we have a startling and provocative correspondence of cycle behavior.

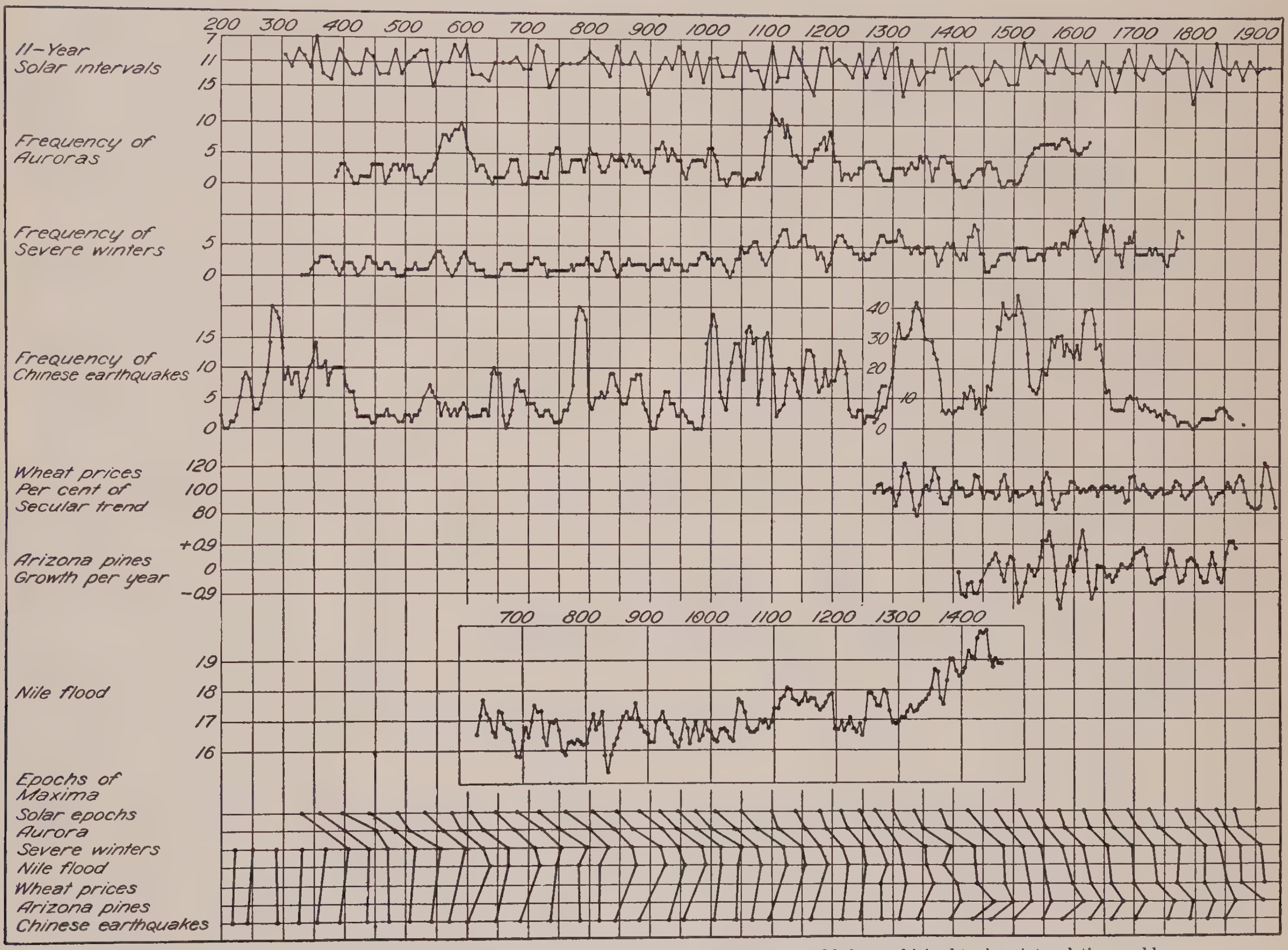


FIGURE 1.—The 37-year period in various solar and terrestrial data. Epochs of maxima are plotted below and joined to show interrelations and lags.

A 2½-Year Demand Growth Cycle*

C. R. CHAPMAN
MEMBER AIEE

In making predictions of future demand peaks, it is usually necessary to examine past data to determine evidence of trends and cycles. Studies of demand growth curves show the presence of distinct 2½-year cycles.

THE POWER DEMANDS on an electric utility system vary in a characteristic pattern throughout the year, with a winter demand peak caused by the longer hours of darkness and a summer peak attributable to air-conditioning loads. The anticipated annual peak is important in system planning, and every effort is made to predict future peaks as carefully as possible. Past records of annual peaks may not be of much help in these predictions, except to provide an average. Table I, which is based on data from the Public Service Company of Indiana, shows the percentage growth in annual peak demand for several years, and reveals little pattern that would be helpful in predicting future growth rates.

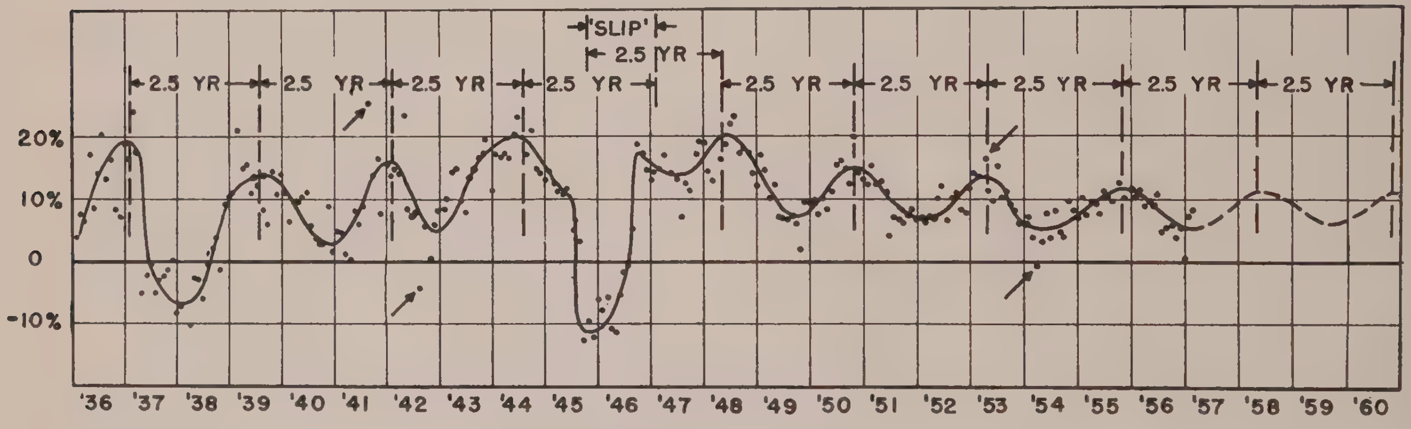


Fig. 1. The 2½-year demand growth cycle. Each point represents the per-cent increase in demand over the same month of the previous year. Arrows indicate typical paired deviations, as discussed in the text. Data is for the system of the Public Service Company of Indiana, Inc.

To investigate this further, the annual growth for each month, over the same month of the preceding year, was determined for this same system from 1936 to the present. The results, expressed as a percentage of the peak load for each month, are plotted in Fig. 1 and show a distinct 2½-year cycle. With the exception of a half-cycle "slip" at the end of World War II, this period has been maintained for 20 years.

Before proceeding with the discussion, it is important to make perfectly clear what type of curve this is. It is not a demand curve, but a curve of rate of growth of demand, with all seasonal variations removed. Each point represents the per-cent increase in demand over the same month of the preceding year. In commerce and business circles, curves of this sort are called "year-to-year relatives," and are usually plotted with 100%, 110%, and 120% taking the place of the zero, 10%, and 20% shown in Fig. 1.

Although a cycle is undeniably present, there is quite a bit of scatter of the experimental points. One technique sometimes used to minimize scatter is to use a "rolling average," where each data point is averaged with the one on each side of it, and then replotted. This has the same effect as drawing a smooth curve through the points, and was considered unnecessary. Another source of scatter in

Table I. Annual Growth of Peak Power Demands

Year	1948	1949	1950	1951	1952	1953	1954	1955
Per-cent Increase	14.1	9.8	13.3	6.3	11.7	5.9	7.9	11.0

Data from Public Service Company of Indiana, Inc. All peaks occurred in November or December. The 1956 peak demand was about 900 megawatts.

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*Reproduced with permission from Electrical Engineering of August 1957.

Full text of District paper DP57-604, presented at the AIEE Great Lakes District Meeting, Des Moines, Iowa, April 15-17, 1957. Recommended for publication by the AIEE Committee on System Engineering.

C. R. Chapman is with Purdue University, Lafayette, Ind.

The author wishes to thank the Public Service Company of Indiana, Inc., and the Edison Electric Institute for making available certain data used in this article, and Prof. Irving Morrissett of the economics department, Purdue University, for assistance with business cycle information.

this type of plot is the tendency toward paired deviations, where an abnormal peak in any month will cause an abnormal low to appear for the same month in the next year, and vice versa. Two such pairs are indicated by arrows in Fig. 1, one occurring in the summers of 1941 and 1942 and the other in the springs of 1953 and 1954. All of the large deviations from the curve can be explained in this way; in fact, one large error that was not paired was found during the preparation of the curves to be the result of a mistake in plotting. It should be noted that this tendency toward paired deviations is not cumulative, but disappears after affecting only two data points.

Not all of the scatter can be caused by paired deviations, inasmuch as extremes in temperature, excessive cloudiness, strikes, and other events are known to affect power system loading. Careful historical investigation along these lines would probably make it possible to modify the data slightly in order to reduce the scatter further. Although this would make a cleaner curve, it would not improve its reliability for forecasting, because each new month contains the possibility of producing new scatter.

The Public Service Company of Indiana system is well balanced between various types of loads, and might be expected to behave similarly to the national average. The Edison Electric Institute has compiled demand growth data for the entire country since 1949. This is plotted at the bottom of Fig. 2, showing that the cycle has been present in the national picture for at least three periods. This curve shows much less scatter, as would be expected for a larger sample; in fact, it can be seen that the scatter in Fig. 1 has decreased steadily over the years as the system has grown. The Edison Electric Institute compiles demand information for the eight Federal Power Commission regions individually, and examination of this data, which is not reproduced here, shows that the cycle is clearly present in five of these regions representing 80% of the total national demand. The cycle would, therefore, be expected to appear in most individual utility systems, although less pronouncedly for smaller systems or for those serving a special, nonrepresentative type of load.

The cycle was found to parallel the growth cycle of the Federal Reserve Board index of industrial production, which is reproduced in part at the top of Fig. 2. Thus, the demand cycle appears to be a reflection of total industrial activity, with the difference in amplitude of the fluctuations attesting to the greater stability of the power industry over industry in general. The industrial cycle is apparently the result of the operation of the law of supply and demand, with the period fixed by natural factors inherent in the economy, just as the period of any oscillatory system is a property of the system and shows up spontaneously in response to excitations of an entirely random nature. Historical events may increase the amplitude of the oscillations, and Government controls may help to damp them down, but only very severe stress, such as that in 1945, has disrupted the period of the cycle.

When the data of Table I is re-examined as a part of the cycle, the apparently random variations become understandable as part of a pattern. The use of the cycle, on systems where it is present, makes possible a minor improvement in utility peak-load forecasting. From the extrapolation shown in Fig. 1, it may be expected that the annual peaks, although still occurring in the winter, will not again show a high increase over the previous annual peak until 1960, and then not again until 1965. Similarly, an unusually heavy summer demand may be expected in 1958. If the summer peak on this system is to exceed the winter peak within the next few years, it will most likely do it in 1958.

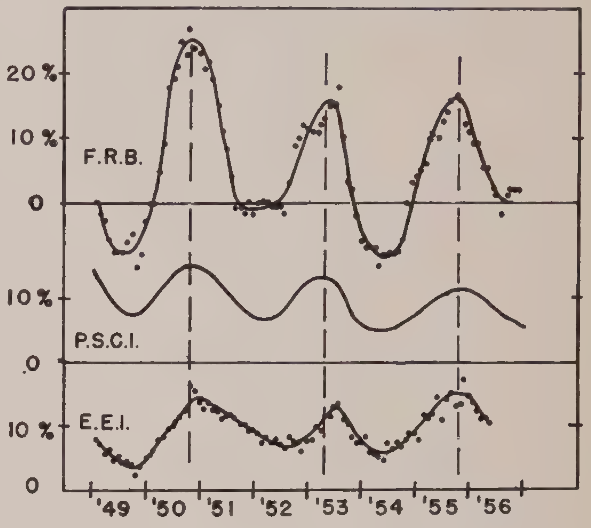

Fig. 2. A comparison of three growth cycles. The vertical dashed lines are 2½-year intervals.

F.R.B.—Federal Reserve Board index of industrial production, year-to-year relatives. P.S.C.I.—Reproduction of a portion of the Public Service Company of Indiana curve shown in Fig. 1. E.E.I.—Demand growth from the Edison Electric Institute, similar to that of Fig. 1, but for the entire United States.

The 2½-year cycle deserves to be included among the factors to be considered when demand predictions are made. As a further indication of this, the curve of Fig. 1 was originally plotted in July 1956, and the data accumulated during the ensuing months can be seen to follow the cyclic pattern satisfactorily.

Library Additions

EMOTIONS

"Do You Know You Have An Emotional Cycle?" by Dr. Rexford Hersey as told to Colin Peters. An article in *Town Journal*, February, 1954.

Dr. Hersey is an industrial psychologist and consultant to management and is Associate Professor of Industry at the University of Pennsylvania.

Dr. Hersey has spent years studying the emotional patterns of men and women and has reached definite conclusions about the lengths of emotional cycles. He finds that although the cycles of individuals range from 16 days to 63 days, the average length for men is about five weeks.

This is the typical length of time it takes for the normal man to move from one period of elation down the scale to a feeling of hopelessness and back up again to the next period of elation.

The situation is more complicated for women, as Dr. Hersey finds three cycles of 14, 28, and 35 days. This makes a woman's chart more irregular in its original appearance; nevertheless, the five week lows can be noted.

The original research for this work was done by individuals who carefully rated themselves every day according to Dr. Hersey's emotional scale. His scale runs like this:

6	Elated	-1	Negative
5	Glowing	-2	Pessimistic
4	Bright	-3	Forlorn
3	Happy	-4	Depressed
2	Cheerful	-5	Despondent
1	Positive	-6	Hopeless
0	Neutral		

Of course a personal knowledge of the repetitive rhythmic pattern of an individual's ups and downs can be most helpful to that individual.

VOLCANOES

"When Will Lassen Peak Again Erupt?" by Arthur Holmes. An article in *The Scientific Monthly*, January, 1935.

Mr. Holmes was a Park Ranger with the National Park Service, U.S. Department of the Interior at the time he wrote the article.

Lassen Peak is the most recently active volcano in the continental United States. It unexpectedly erupted on May 30, 1914, blowing a U. S. Forest Service fire lookout station to bits. In 1915 two major eruptions devastated a large area of the peak.

Naturally, Mr. Holmes was interested in when the next eruption might occur. He set the year 1980 as the most probable date of the next eruption.

This prediction was based on the work of Dr. Omori who had been professor of seismology at the Imperial University of Tokyo.

Dr. Omori found that "many Pacific volcanoes erupt in definite periods of 130 years, with less frequent occurrences at half periods, or 65 years."

Also, R. H. Finch, U. S. Geological Survey volcanologist, reported that Kilauea Volcano in Hawaii National Park definitely follows this 130- and 65-year pattern.

The climax of the last Lassen eruptions was in 1915. Adding 65 years to 1915 gives 1980 as the approximate time of the next blow-out.

Mr. Holmes checked his theory by going backwards. The first eruption prior to 1915 should have been in 1850. Indians, white settlers and miners all reported a red glow in the sky at night around 1850. Scientific investigators believe that the Chaos Crags (near Lassen Peak) might have been formed about 1735, or about 115 years prior to 1850, close enough to fit into the theory.

LAKE LEVELS

"The Practical Application of the Rhythmic Fluctuation of the Levels of the Great Lakes" by H. A. Musham. An article published in the *Journal of the Western Society of Engineers*, Vol. 48, No. 4, December, 1943.

Mr. Musham investigated the rise and fall of the levels of the Great Lakes and found a regular cycle with periods of 22.75 and 22.84 years.

The rhythm of the fluctuation is as follows:

Years of Period	Stage of Water
0	Maximum high
7-8	First intermediate low
10	First intermediate high
11-12	Minimum low
15	Second intermediate high
18-19	Second intermediate low
23	Maximum high

Obviously, the cycle as described here is not a single, simple rhythm. However, Mr. Musham has found historical corroboration for the highs and lows.

A new cycle began in the period 1950-1954.

FLUCTUATIONS IN NUMBERS OF BIRDS IN THE TORONTO REGION

by

J. Murray Speirs

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FOUNDATION FOR THE STUDY OF CYCLES

FOREWORD

Naturalists are concerned with the cycles of bird abundance because they are such an important element in animal life.

Cycle students have a broader interest. They are concerned with cycles as such.

In the interesting paper which follows, J. Murray Speirs calls attention to 3- to 5–year cycles, 5-or 6–year cycles, and 9- to 11–year cycles in the abundance of various sorts of wildlife in the Toronto region. He gives the dates of the peaks and shows the degree of regularity.

No one yet knows the cause of this behavior, nor do we know if these wildlife cycles are related to the 3- to 5–year, 5- or 6–year, and 9- to 11-year cycles that have been discovered in other natural science phenomena and in human affairs.

It is the job of the future to find out!

E. R. Dewey

FLUCTUATIONS IN NUMBERS OF BIRDS IN THE TORONTO REGION

BY J. MURRAY SPEIRS

The numbers of any animal species present in a given region fluctuate year by year. In some cases there has been a tendency for the years of greatest abundance to occur at regular intervals. The purpose of this paper is to put on record certain periodic fluctuations which have been detected in the Toronto region, in the winter populations of Northern Shrike, Snowy Owl, American Rough-legged Hawk, Pine Grosbeak, Horned Owl, and Goshawk. In this paper the Toronto region is that area within twenty-five miles of the Toronto city limits. This area reaches to Burlington on the west, to Newmarket on the north, and includes Whitby on the east. The years of greatest abundance will be called peak years, or simple peaks.

The records from which the conclusions presented in this paper have been derived consist of a great mass of data of varying quality. Few of the identifications have been made from collected specimens but with the increased use of binoculars and with the increased quantity and quality of reference books it is no longer necessary to identify birds by collecting them, certainly not for a statistical work where exceptional records automatically play an insignificant role. The largest source of data used in this study is the mass of sight records recorded by local bird students.

The chief sources of records are as follows:

1. The file of checking cards in the Royal Ontario Museum of Zoology. These cards list all the species of birds which have been identified in the Toronto region in recent times. Spaces are provided for indicating the number of each species seen on a trip, the locality, the date, the name of the observer, the time spent observing, and the weather. The file contains continuous records since 1885. Records previous to 1920 have been obtained from the diaries of a number of naturalists.

2. The author's records. These consist of daily lists of all species observed, starting from January 1, 1924. Numbers were used in a few cases before 1931 and starting in January, 1931, all the lists have included estimates or counts of the numbers of each species seen.

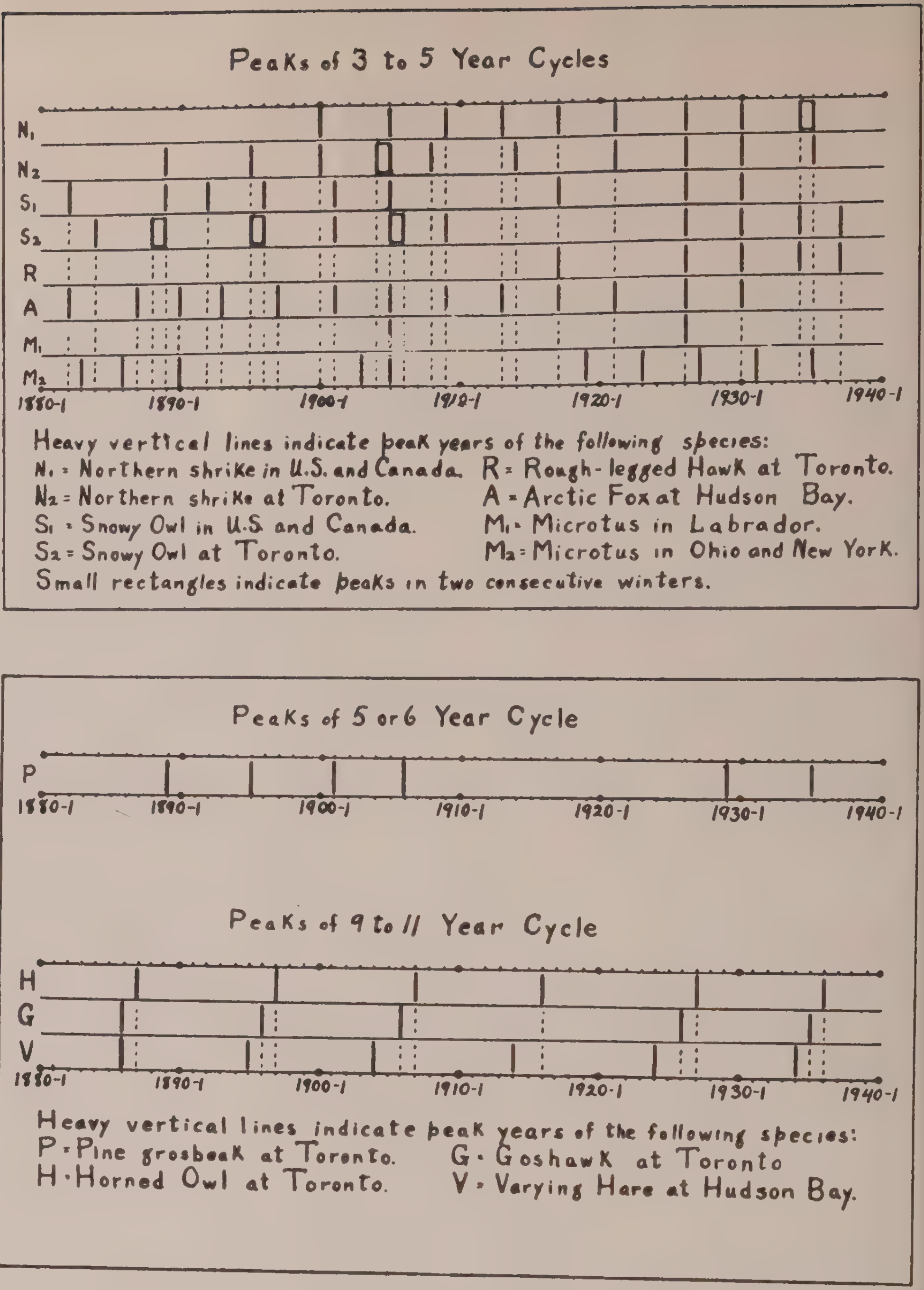
From these two sources about 10,000 complete daily lists are available and about 3,000 lists that are more or less nearly complete. The number of available daily lists varies from about ten per day in late July to about forty-five per day in early May.

3. These data are supplemented by numerous scattered records in the following sources: the records of the Brodie Club and the Toronto Ornithological Club; specimens in the collections of Mr. J. H. Fleming and the Royal Ontario Museum of Zoology; the literature file of the Royal Ontario Museum of Zoology, in which the ornithological literature is catalogued by species and by locality; the 'Canadian Field-Naturalist'; the 'Transactions' of the Ornithological subsection of the Royal Canadian Institute.

For certain species of birds which winter in the Toronto region these records have been tabulated by years, as is illustrated by the following table for the Horned Owl. From these tables it is possible to pick out certain peak years for each species. These peak years have been indicated on a graph so that the periodicity, if any, might be apparent and so that peaks of different species might be compared.

Periodic Fluctuations of the Horned Owl

Winter of	Records
1887-88	
1888-89	x,x,1,1.
1889-90	1,1,1.
1890-91	1,1,1,1.
1891-92	1.
1892-93	
1893-94	
1894-95	
1895-96	1.
1896-97	1,1,x.
1897-98	x,x,1,x, 1,1, "several."
1898-99	1,1,1.
1899-00	
1900-01	x.
1901-02	x.
1902-03	
1903-04	
1904-05	1.
1905-06	1.
1906-07	1,1,1.
1907-08	1,1,1,1,1, 1,1, "125 shot within 60 mi. of Toronto,"
1908-09	x.
1909-10	x.
1910-11	
1911-12	x.
1912-13	
1913-14	x.
1914-15	
1915-16	
1916-17	x, "hundreds."
1917-18	1,x,1.
1918-19	
1919-20	
1920-21	
1921-22	
1922-23	x,1.
1923-24	x,x.
1924-25	1.
1925-26	1,1,1,1.
1926-27	2,1,1,1.
1927-28	1,1,1,1,1,4, 2,1,2,1,1,1, 2,1,x,3,1.
1928-29	1,2,1,1,1, 1,2,1,2,1, 1,1,1,1,2.
1929-30	1,1.
1930-31	
1931-32	3,1,1,2,2,2.
1932-33	
1933-34	1.
1934-35	1,1.
1935-36	1,1,1,1, 1,1,1,1,
1936-37	1,1,1,1,1, 1,1,1,1,1, 1,1,1,1,1, 1,1,1,1,1, 1,2,1,2,1, 2,1,1, "11 shot."



TEXT-FIG. 1.—Fluctuations in numbers of birds in the Toronto region.

In Text-figure 1 the years of peak abundance of a number of species of birds and mammals are indicated by solid vertical lines. The vertical level at which these lines begin indicates the species to which they refer. For instance in the nine-to-eleven-year cycle, the varying hare peaks for the Hudson's Bay watershed are indicated by solid vertical lines running between the time axis and the next horizontal line. The Goshawk peaks for the Toronto region are indicated by solid vertical lines running between the second and third horizontal lines. The Horned Owl peaks for the Toronto region are indicated by solid vertical lines running between the third horizontal line and the upper time axis. The same system is used in indicating the peaks of abundance for animals which exhibit a three-to-five year cycle. Dotted lines are used to carry these solid vertical lines down to the time axis on which the dates are indicated at intervals of ten years beginning with the winter of 1880-81. When peaks have occurred during two successive winters the solid vertical lines have been joined at the top and bottom so that these two-year peaks appear on the graph as little rectangles.

Three-To-Five-Year Cycle

American Rough-legged Hawks, Snowy Owls, and Northern Shrikes have shown year-by-year fluctuations in numbers in the Toronto region, with peaks at intervals of from three to five years.

American Rough-legged Hawk cycle. It is only in recent years that American Rough-legged Hawk peaks have been recorded in the Toronto region. It will be noted from Text-figure 1 that peaks have occurred during the following winters:

Peak Winters	Intervals
1917-18	
....	
1926-27	9 years (4-5)
1930-31	4 years
1934-35	4 years
1937-38	3 years

It will also be noted that these peak years have in every case coincided with peaks of the Snowy Owl. It is therefore reasonable to suppose that similar peaks occurred before 1918 but escaped record. The existence of this three-to-five-year cycle in the numbers of American Rough-legged Hawks does not appear to have been noticed previously.

Snowy Owl cycle. The periodic fluctuations in the numbers of this species have probably attracted more attention than the fluctuations in the numbers of any other American species of bird. Fleming (1907) recorded peaks for this species as early as 1833-34, while Gross (1927, 1931) has recorded the Snowy Owl peaks which have been observed in the northeastern United States and Canada since 1876-77. It will be noted from Text-figure 1 that Snowy Owl peaks have occurred during the following winters:

Toronto Region	U.S. and Canada	Intervals
....	1882-83	
1884-85	....	2 years
1888-89-90	1889-90	4 or 5 years
....	1892-93	3 years
1895-96-97	1896-97	3 or 4 years
1901-02	1901-02	5 or 6 years
1905-06-07	1905-06	4 or 5 years
1909-10	....	3 or 4 years
....	....	8 years (4-4)
....	1917-18	
....	....	
1926-27	1926-27	9 years (4-5)
1930-31	1930-31	4 years
1934-35	1934-35	4 years
1937-38	....	3 years

It will be apparent from the above table that Snowy Owl peaks have occurred at intervals of from two to six years (usually three to five).

No evidence has been obtained which suggests that a Snowy Owl peak did occur in 1913-14. The fact that Snowy Owls did not appear on the 'Bird-Lore' Christmas censuses for that year indicates that this expected peak actually did fail to materialize. The 1922-23 peak, which was not recorded by Gross nor in the Toronto region, may have occurred but the number of owls may not have been sufficient to attract general attention. Snowy Owls were recorded near London, Ontario, during that winter (Saunders and Dale, 1933).

Northern Shrike cycle. Davis (1937) drew attention to the existence of fluctuations in the abundance of the Northern Shrikes in the northern United States and Canada. Similar fluctuations have been detected in the Toronto region. It will be noted from Text-figure 1 that peaks have occurred during the following winters:

Toronto Region	U.S. and Canada	Intervals
1889-90	....	
....	....	
1895-96	....	6 years (3-3)
1900-01	1900-01	5 years
1904-05-06	1905-06	4 or 5 years
1908-09	1909-10	3 or 4 years
1914-15	1913-14	4 to 6 years
....	1917-18	3 or 4 years
1921-22	1921-22	4 years
1926-27	1926-27	5 years
1930-31	1930-31	4 years
1935-36	1934-35-36	4 or 5 years

From the above table it will be apparent that peaks of this species have occurred at intervals of from three to six years (usually four or five).

Some other three-to five-year cycles. Gross (1927, 1931) drew attention to the correspondence of Snowy Owl peaks and peaks of the Arctic fox, the latter based on the Hudson's Bay fur returns. From Text-figure 1 it will be seen that these peaks have agreed very well since 1900, but that prior to 1900 the agreement was poor, possibly due to less accurate records. Davis (1937) drew attention to the coincidence of both of these peaks with peaks of the Northern Shrike. Here again the agreement is evident since 1900 but not before. He also placed on record two peaks of *Microtus* sp.? in Labrador which coincided with the peaks of the Snowy Owl, Northern Shrike, and Arctic fox. These were the peaks of 1905-06 and 1926-27. Hamilton (1937) studying *Microtus* in the northern part of the United States found a cycle which has been of approximately the same length as the cycles of those species mentioned above. An examination of Text-figure 1 will show that his peaks have been decidedly out of phase with those recorded for the other species.

NORTHERN SHRIKE

From the above discussion the following conclusions may be drawn. The American Rough-legged Hawk, the Snowy Owl, the Northern Shrike, the Arctic fox, and that form of *Microtus* living in Labrador all have exhibited fluctuations in abundance with peaks at intervals of from three to five years. Since 1900, the peaks of abundance of all these species have agreed very well but before 1900 the agreement was poor, possibly due to inaccurate data. The form of *Microtus* living in the northern United States has exhibited a three-to five-year cycle also, but its peaks have been out of phase with the peaks of the other species. The Rough-legged Hawk, Snowy Owl, and Northern Shrike all live chiefly on mice and other small mammals, yet in 1905-06 and again in 1926-27 they appeared in the south, when according to Davis (1937) *Microtus* in the north was at its peak of abundance. It seems obvious then that these predators did not on those occasions emigrate due to lack of food.

The following alternative explanation for the appearance of large numbers of birds in the south in certain years has been suggested. A peak in the abundance of the food species has resulted in an unusually successful breeding season which has produced a peak population. When such peak populations have come south in late autumn the large numbers have attracted general attention and bird students have received the impression that an unusual migration was taking place. The numbers which came south in years when these species were less abundant were so small that it was not worth while looking for them. As they were not looked for, very few were seen. It is possible also that when the birds became very numerous their migratory tendencies were accentuated (as has been proved to be the case with certain locusts). This would result in these northern spceies being seen in great numbers in the south during the winters immediately following an unusually successful breeding season.

Five-or Six-Year Cycle

Pine Grosbeaks have shown marked fluctuations in numbers in the Toronto region. Peaks have occurred at intervals of five or six years (usually six). From Text-figure 1 it will be noted that these peaks have occurred during the following winters:

Peak Years	Intervals
1889-90	
1895-96	6 years
1901-02	6 years
1906-07	5 years
....	
....	23 years (6-6-6-5)
....	
1929-30	
1935-36	6 years

It will be noted that the peaks during the interval 1910-25 have escaped record. This is not remarkable when the scarcity of observers during that period is considered. The four early peaks were also recorded by Saunders (in litt.) at London, Ontario.

SNOWY OWL

GREAT HORNED OWL

Nine-to Eleven-Year Cycle

Goshawks and Horned Owls have shown very well-marked peaks of abundance in the Toronto region at intervals of from nine to eleven years. From Text-figure 1 it will be noted that these peaks have occurred during the following winters:

Goshawk Peaks	Intervals	Horned Owl Peaks	Intervals
1886-87		1887-88	
1896-97	10 years	1897-98	10 years
1906-07	10 years	1907-08	10 years
....		1916-17	9 years
1926-27	20 years (10-10)	1927-28	11 years
1935-36	9 years	1936-37	9 years

MacLulich (1937) and Clarke (1936) have demonstrated the existence of similar cycles in populations of the varying hare and the Ruffed Grouse. The Goshawk and Horned Owl cycles for the Toronto region are compared in Text-figure 1 with the varying hare cycle as presented by MacLulich (1937) for the Hudson's Bay watershed. The figure shows that these cycles are of approximately the same length but that they are out of phase. The Goshawk peaks and the Horned Owl peaks have usually been respectively one and two years later than the hare peaks as recorded for the Hudson's Bay watershed.

Although the Goshawk and Horned Owl peaks have been very conspicuous, at least in the Toronto

ROUGH LEGGED HAWK CAUGHT BY BOX TORTOISE

region, no reference to a nine-to eleven-year cycle in these species has been noted in the literature. Individual peaks have frequently been recorded. Mr. C. E. Hope, of the Royal Ontario Museum of Zoology, who has examined a large number of Goshawks and Horned Owls collected during these flights, states that these birds were in good condition, i.e., that there was no evidence from the bird's condition to indicate that lack of food had caused them to come south into the Toronto region.

Some of the species of birds that have wintered in the Toronto region have fluctuated markedly in numbers from year to year. The peak years for any one of these species have tended to be separated by definite intervals, but variations from this average interval have occurred which have probably been distributed about the average value according to the probability curve. The peaks of abundance of the American Rough-legged Hawk, the Snowy Owl and the Northern Shrike have usually occurred at intervals of from three to five years, while peaks of the Pine Grosbeak have occurred at intervals of five or six years, and peaks of the Goshawk and Horned Owl have occurred at intervals of from nine to eleven years. The peaks have occurred in the years immediately following the maximum abundance of their food in the north. No evidence has been detected to suggest that lack of food drove the birds south.

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Royal Ontario Museum of Zoology
Toronto, Ontario

Foundation Affairs

HOW TO START A LOCAL CYCLES CHAPTER

BY JACK A. DORLAND

Wasn't it Robert Louis Stevenson who said that the hardest thing about learning to be a writer is to apply the seat of the pants to the seat of the chair? Well, the hardest thing about starting a cycles chapter in your own home town is to apply the seat of your pants to the seat of your chair just long enough to write a short simple little letter to Mr. E. R. Dewey, Director, Foundation for the Study of Cycles, East Brady, Pennsylvania, along the following lines:

The Letter to the Foundation

'Dear Ned,

'I know very little about cycles, but they *intrigue* me. I know *nothing* about forming a local cycles chapter, but I think we really need one here in our locality. Is there some way I could assist in getting such a movement underway?'

Sincerely,

Avid Cycler'

Almost before you can say 'Foundation for the Study of Cycles', Mr. Dewey will have a return letter in your hands, I warrant, warmly commending your interest and telling you that in the next day or so [Mr. Dorland is an optimist. Ed.] you will receive, either from his office or from Mrs. Gertrude Roessle, Manager of the Foundation's New York office, envelopes addressed to the names and addresses of all Foundation Members in your city and any nearby cities you name.

The Letter to Local Members

The receipt of those names and addresses will then permit you to drop a note to each of those listed, saying simply:

'Dear Mr. Cycles Enthusiast,

'Don't you think it would be nice if we had a local chapter of the Foundation for the Study of Cycles? I wrote Director Dewey recently offering to help establish such a local group. He indicated that you, and others in this area to whom I am also writing, might be similarly interested. Are you willing to be a Founding Member? If you are, and I hope you will be, won't you fill out the attached Questionnaire and return it to me in the enclosed stamped, self-addressed envelope, so that we can get started.'

The Questionnaires you enclose with your invitation letter might be modeled somewhat along these lines:

The Questionnaire

Date

My name is:
Address my mail to:
My telephone number is: Office: Home:
My particular field of interest in cycles is (stock market, weather, commodity prices, general, etc.):
I suggest we meet:
Weekly—— Twice a month—— Monthly—— Quarterly——
Best day of the week for me to meet is:
Mon.—— Wed.——
Tues.—— Thurs.——
Fri.——
I prefer that meeting be for:
Lunch—— Dinner——
Either—— Other (Specify)——
I suggest that the total cost of our meetings be limited, (including food, tips and checkroom,) to:
$2.00——$3.00——$4.00——$5.00——$6.00 and up——
I am willing to work at an appropriate administrative assignment such as:
A Chapter Officer——A Committee Chairman——
A Committee Member——
I have some suggestions, as follows:

The Response

At this point in the proceedings, about all you have to do is to sit back and wait for the Questionnaires to be returned. Unless I miss my guess, you will find (as we did in New York) that *well over half* of those you write to will reply (which is a fabulous 'return' for a reply-by-mail request). Also, I think you will find that many of those you have written will write you a personal note of encouragement and will offer to assist in some more specific manner in the good work. In fact, I'll be surprised if you don't even receive some promises of financial aid—and even a few small checks accompanying some of the returned Questionnaires.

As the Questionnaires are received, you might want to keep a running score card of how many votes were cast for each item to be voted on. When you have tallied a substantial number of Questionnaires, you will see that the results will start to form a definite pattern. For instance, it *might* become apparent that the cycles fanciers in your community want to meet for lunch once every other month on a Friday, that the concensus of opinion is that the total cost of the lunch, including tips, checkroom, etc., should not exceed $3.00, and that it might be well to have a luncheon speaker on the locally preferred subject of 'Cycles in the Weather'. This, of course, is just a made-up example, and an improbable one at that. Here in New York the concensus of opinion was that: 'The New York Chapter should meet once a month for dinner on a mid-week evening, with total expenses of about $5.00 maximum. Favorite subject: "Stock Market Cycles".

The Next Step

The Questionnaire 'concensus' will by this point in your operations have clearly pointed out to you, I feel confident, just what your *next* step should be. Presumably it will be to select a local club or restaurant serving good food and within the price range desired, check total costs, and make a tentative reservation for an appropriate date.

The Speaker

Then is time enough to start looking for a speaker for your first meeting. Get the best your community affords, making sure that some aspect of rhythmic cycles is what he is qualified to talk on—and *will* talk on. Assign the subject yourself, or let the speaker select his own subject, whichever seems preferable. Gear the title of the talk to the favorite interest expressed by your local cycle enthusiasts. (It is, of course, unnecessary to state that your speaker would not expect any renumeration for his services, beyond a free meal and a chance to air his views).

At this point, confirm the date with your selected club or restaurant, giving them a rough idea of how many you think will be present, but *don't* give any formal commitment, guarantee, or deposit at this point or even later. (If such is *required,* I suggest you seek another place to meet!)

Invitation

Now that your speaker, his subject, the date, and the place are as firm as they probably ever will be, it is time to send out your invitation letters. Try to get them out at least two weeks before the meeting date. Get them 'duplicated' if necessary. Ask in the letter of invitation for definite reservations accompanied by check. Enclose a stamped self-addressed envelope to encourage prompt and favorable replies. *Don't* make payment in advance obligatory, as a certain few won't trust their knowledge of local weather cycles and will want to wait and see what the weather *really is* before they decide to risk their few bucks. A telephone follow-up is a good idea if you have the time.

The Agenda

When you find time, it might be well to jot down a little agenda of appropriate matters to discuss at the forthcoming first meeting. Possibly you might even prepare a suggested agenda and have one copy for each person at the meeting. Here is a *sample* agenda:

I. Welcome to Founding Members
II. Official Greetings from Foundation Director
III. Introductions
IV. Resolution to Found Chapter
V. Summary of Information from Questionnaires
VI. Report on Dinner Expenses
VII. Election of Officers
VIII. Appointment of Committee Chairmen
IX. Appointment of Committee Members
X. Discussion of Possible Aims and Purposes of Chapter.
XI. Address by Guest Speaker
XII. Plans for Next Meeting
XIII. New Business
XIV. Motion to Adjourn

The Horrible Aftermath

I believe you will be happily surprised, as were we in New York, at how the reservations come in—not many at once, it's true, but a steady trickle, nevertheless, so that before long it will become undeniably apparent, even to incredulous you, that you *are* going to have your own local Chapter of the Foundation for the Study of Cycles, that you *are* going to have a First Meeting on a certain date (that seems to be *racing* to meet you), that you *are* going to have a speaker qualified to entertain, instruct, and interest each of you on some facet of rhythmic cycles, and that, Horror of Horrors!, *You* Yes, *You*! (Little old, innocuous, no good, never-meant-no-harm *You*)—have been uncontestedly and unanimously elected *President* of the Yourtown Chapter. Happy Cycling!

Note: I've pried a picture out of Dorland so that you can see what he looks like. *Ed.*

JACK A. DORLAND

Late News Flash

The next monthly dinner meeting of the New York Chapter will be held May 20 in private rooms of the White Turkey Sutton Place restaurant, 300 East 57th Street, New York City. Reservations are necessary. The subject will be "Cycles in the Stock Market."

Members of the Foundation who live in the New York City metropolitan area are cordially invited to join the New York Chapter. Those interested should mail $5.00 annual dues to Chapter Treasurer, Paul H Halladin, 24 Oakview Avenue, Maplewood, New Jersey.

Letters to the Editor

CYCLES IN UNITED STATES HISTORY

Dear Mr. Dewey:

Your Editor's Note following my article on *1959-and a Cyclical Theory of History* (Jan. '58 issue), was carefully read and appreciated by me.

Although my primary point was to show a cyclical acceleration in American history, the pattern is so orderly and harmonious that it contains within it a rhythm of even beat as well. The following chart and table (see below) demonstrate this.

As shown by the right hand column below, the margin of error in the theory so far, has not exceeded 12/100th of 1% and has been as close as 1/100th of 1%. This improves the margin of error previously reported.

Leap years have been taken into consideration in the above figures. The change in the system of calendar from the Julian to Gregorian which took place in America in 1752 has *not* been taken into consideration because it seems difficult to determine authoritively whether the traditional historical date of May 13th, 1607 has been altered. In any case, the possible difference would amount to only several days over the whole period.

Most cordially yours,

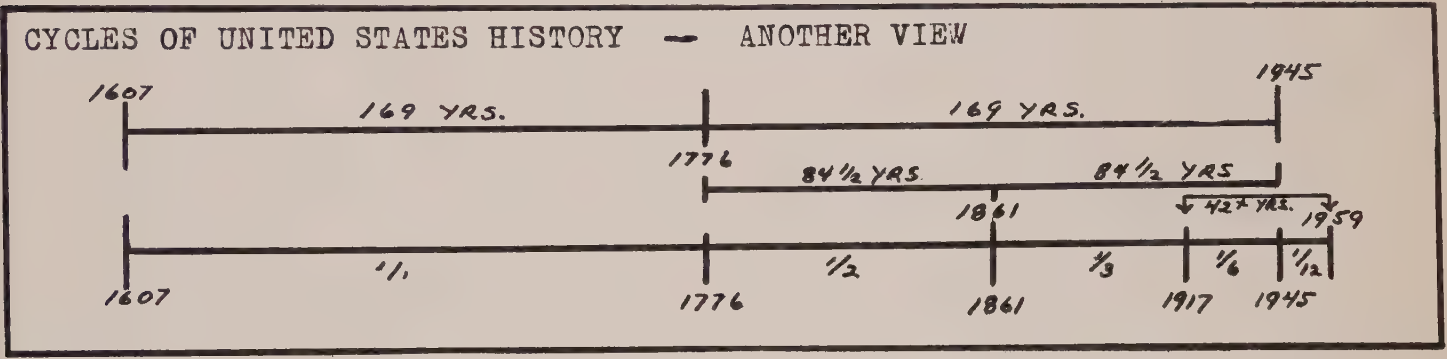
Edwin A. Lewin

Editor's Note: In January we published the article *1959 and a Cyclical Theory of History* by Mr. Lewin. Here Mr. Lewin refines his work by using days instead of years.

Before we are justified in accepting Mr. Lewin's theory we must see if this progression continues, and if similar progressions are present in other historical sequences.

The relationships are dramatic. And 1959 could well be a year of crisis. Who am I to say the progression has no validity? However, this subject is getting out of our field, which is rhythmic cycles, into the larger field of pattern.

E. R. D.


CYCLES OF UNITED STATES HISTORY — ANOTHER VIEW

APPENDIX -- TEST FOR MARGIN OF ERROR USING DAYS IN CALCULATIONS

CYCLE (See Page 2)	ACTUAL YEARS & DAYS (Y)-(D)	ACTUAL DAYS (365¼ to YEAR)	FRACTION OF CYCLE	DAYS THEORETICAL	DAYS VARIABLE	% THEORETICAL OF 1st CYCLE	% ACTUAL OF 1st CYCLE	% ERROR THEORETICAL TO ACTUAL
1st	169-52	61,778	1/1	61,778	-	100	100	-
2nd	84-215	30,895	1/2	30,889	6	50	50.01	0.01
3rd	56-61	20,514	1/3	20,593	79	33.33	33.21	0.12
4th	28-101	10,328	1/6	10,297	31	16.67	16.72	0.05
5th	(14-36 Theoretical)		1/12	5,149	?	8.33	?	?
6th	The 6th Cycle would begin around August 21st, 1959							

THE LONG CYCLE OF CIVILIZATION

Dear Mr. Dewey:

I note in your Director's Letter in the May 1957 issue you mention long term trends of 1500 years or so in the growth and decay patterns of civilizations. This is the figure used by Petrie in his book "The Revolutions of Civilization" which was reproduced in the April 1956 issue. In the June 1956 issue I commented that the figure appeared to be about twice too long when applied to the Mexican and Central American cultures.

Further study indicates that it may also be about twice too long when applied to the Mediterranean cultures. Petrie originally derived the figure from the Early, Middle and Late Cretan periods and the contemporary Egyptian periods, but the chronology he used, currently in acceptance in 1911, has since been drastically revised in the light of later discoveries. The Encyclopaedia Britannica (1955 ed.) Vol. 6, page 679, lists these three periods in Crete, with the corresponding Egyptian periods from the I to the XX dynasties, and dates them as running from 3400 B.C. to 1100 B.C., which would give an average of only 767 years. The dates Petrie used for the Euphrates-Tigris area are subject to similar correction elsewhere in the Encyclopaedia, with the phase difference between these and the west tending to shrink or disappear.

For the years from 1100 B.C. to date, four cycles would seem to fit history better than two. For instance:

1. Grecian period, to Alexander's death.
2. Roman period, to the Fall of Rome.
3. Islamic period, to the reconquest of Spain.
4. Modern period, now in its latter phases.

The above would put the Renaissance in the early stages of the Modern period, which is to me more acceptable than to attempt to dispose of such artists as da Vinci, Michelangelo and Raphael as decadent copyists.

The graphs showing Chinese epochs in Chapter XIV of your book, while primarily plotting the frequency of internecine wars, also indicate cultural cycles, and are just under 800 years in length.

Reviewing all of the identifiable cultural cycles in various parts of the world, a picture begins to emerge, faintly suggesting that they may all be approximately in phase, and even the possibility that those nearer the Equator may occur later as noted in other phenomena by Dr. Wing.

Experimentally, I have set up the following dates as representing the division points between cultural cycles for 30° latitude:

3380 B.C.
2590 B.C.
1800 B.C.
1010 B.C.
220 B.C.
570 A.D.
1360 A.D.
2150 A.D.

These dates fit fairly well with available data as to the Mediterranean nations, including Mesopotamia, with the Chinese graphs mentioned above, and with Mexican and Central American cultures. Little data is available concerning cultures north of 30° latitude, but Japan has a long and fairly well documented history, and a study of their art forms might develop cycles which could be compared with the above. The introduction of Buddhism into Japan in 552 A.D. could well be one of the division points.

Petrie notes in his book that these division points often mark the times of migrations of peoples; sometimes peaceful and sometimes warlike, with the cultural cycles being a secondary effect sparked by the migrations. This viewpoint may permit the picture to be extended to include migrations such as that of the Achaeans, who entered the Grecian peninsula about 1800 B.C. and were displaced by the Greeks who streamed down from the north about 1100 B.C.

I am hoping to find the time for the research which I feel this subject deserves. Meanwhile I shall continue to collect data and may someday be able to organize it into a readable article.

Very truly yours,
James A. Block
Los Angeles 35, California

Dear Mr. Block:

A book called *Long Warm Weather Cycle Ahead* by Hideo Nishioka, published by the International Economic Research Bureau, 68 Williams Street, New York 5, New York ($2) attempts to trace a 700-year cycle of cold and warmth from the 38th century B.C. to the present time. I think you will find Nishioka's material of considerable interest.

Ever cordially yours,
Director

The Cycle Round-up

MAY—JUNE 1958

This month's Round-Up includes eight different subjects. Five of these items are given half a page and the latest available monthly figures are posted on the charts.

These items, together with the recent figures are:

Stock Prices . . . . (see below)

Month	Index
1957 - July	48.51
Dec.	40.33
1958 - Feb.	41.26
Mar.	42.11
Apr.	42.04

The combination of long-term cycles is down at the present time.

Bond Yields . . . . Page 136

Month	% Yield
1958 - Feb.	4.01
Mar.	4.04
Apr.	4.04est.

The ideal 54-year cycle in domestic corporate bond yields is on the way up from a low in 1951.

Residential Building . .Page 136

Month	Contracts: Million $
1957 - Feb.	875
1958 - Jan.	777
Feb.	727

The combined seasonal and 32.3-month cycles are on the way up to a top in April.

Wheat Prices . . . . . .Page 140

Month	Cents/Bushel
1958 - Jan.	237.5
Feb.	236.5
Mar.	238.3

These prices are for No. 1 dark northern spring wheat at Minneapolis.

Corn Prices . . . . . . Page 140

Month	Cents/Bushel
1958 - Feb.	112.8
Mar.	116.5
Apr.	125.7est.

Corn prices are of No. 3 yellow at Chicago.

The ideal 67 1/3-month cycle in corn prices is in a downward phase at the present time.

* * * * * * * * *

More extensive coverage is given to the following:

Egg Prices . . . . .Page 137
Liabilities. . . . . . .Page 138
Copper Prices. . . . . .Page 139

* * * * * * * * *

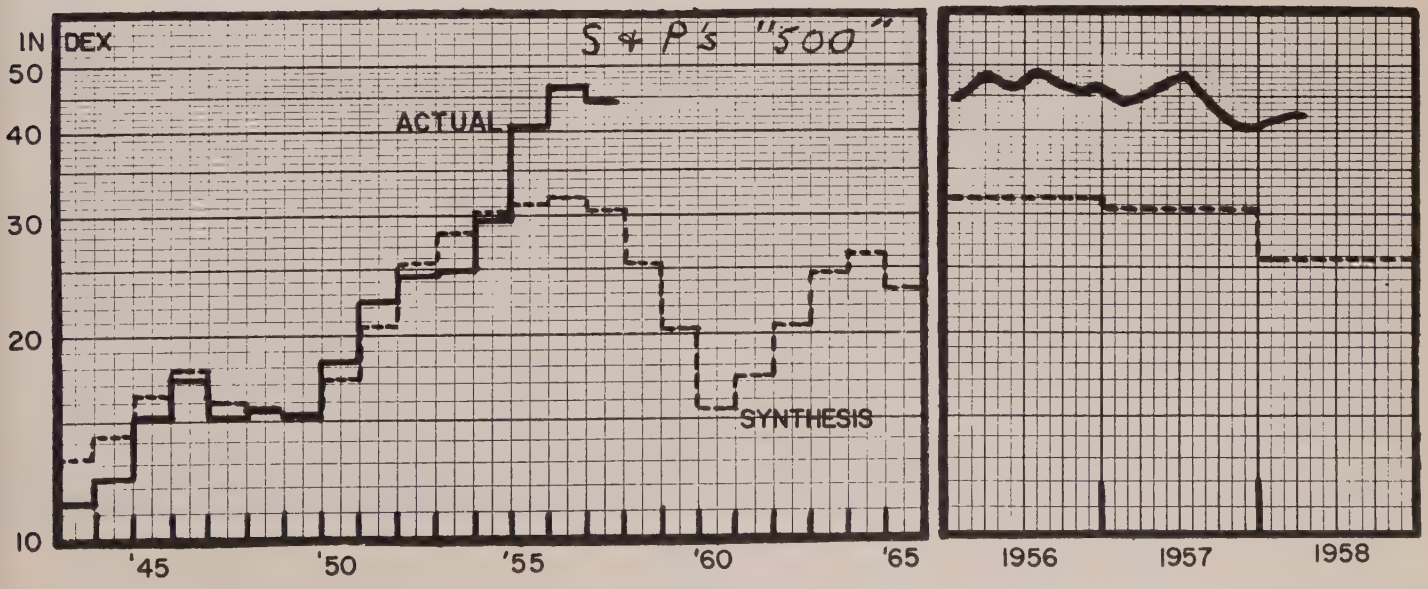
The object of this section of the magazine is to enable us to keep track of some of the many subjects we have covered in the past.

Of course we cannot include the detail that the original stories do, but this does enable us to follow the extent to which cycles are or are not continuing to dominate.

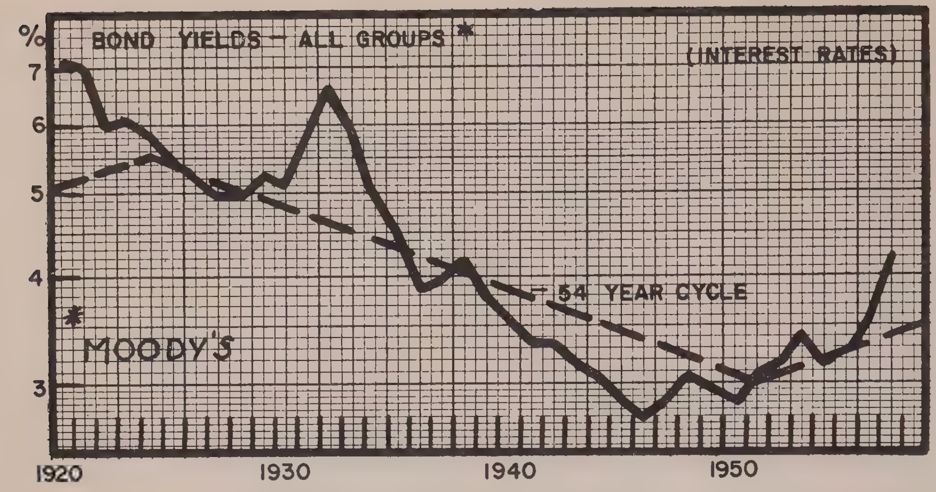
Do not forget that if the current performance is poor, this does not necessarily affect the validity of the cycle over the long run.

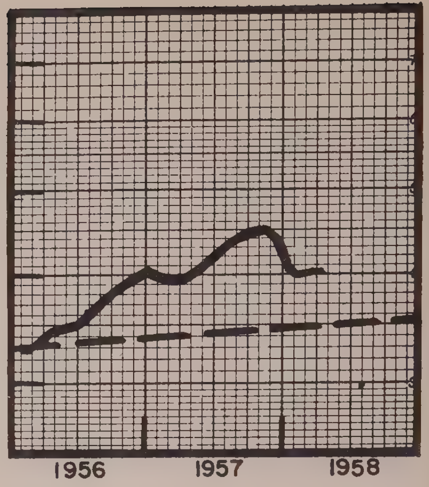
G. Shirk

STOCK PRICES

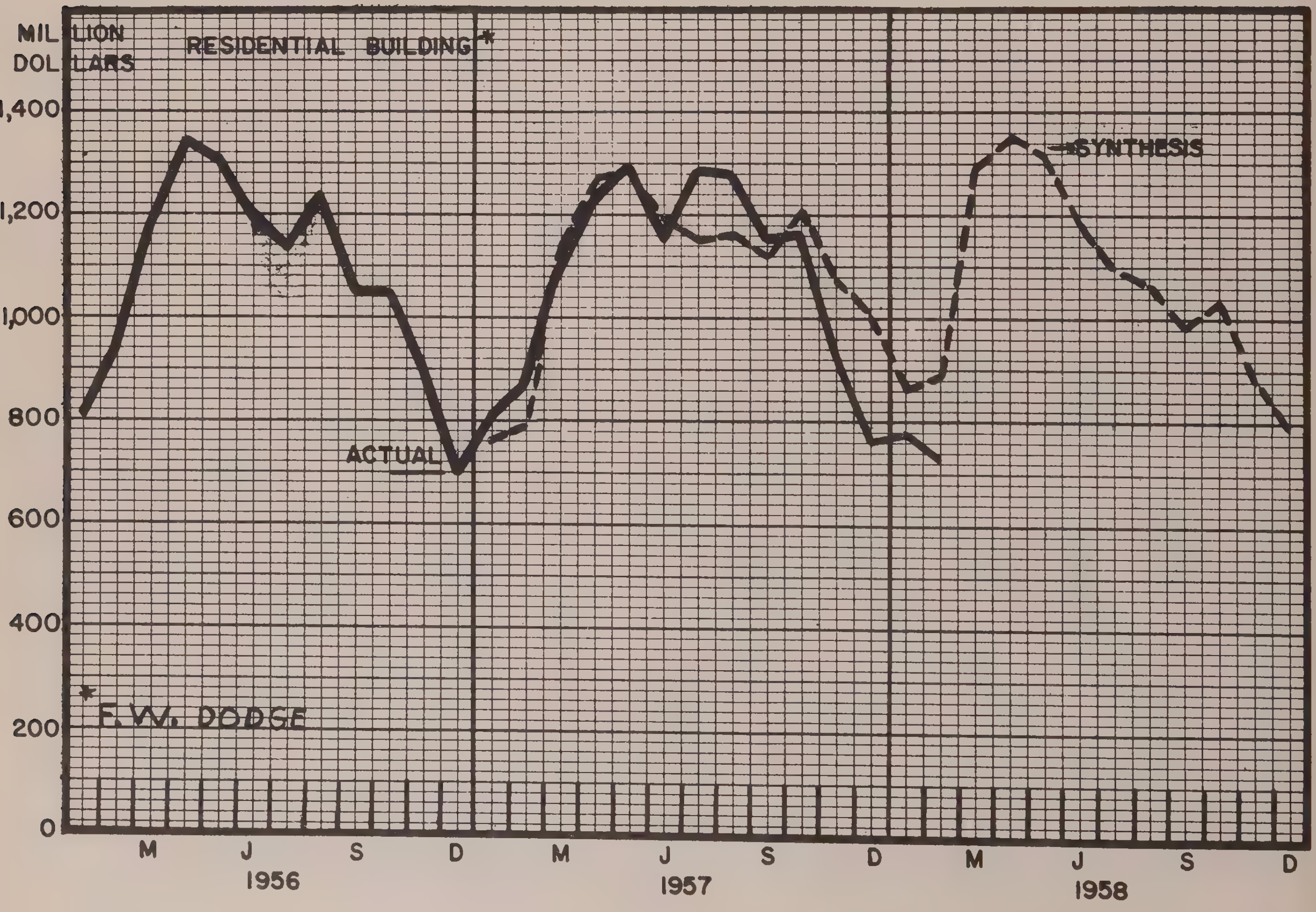


BOND YIELDS





RESIDENTIAL BUILDING CONSTRUCTION



EGG PRICES

Since World War II the price of eggs (extras, large, wholesale, at Chicago) have been dominated by a 26.5-month cycle in addition to the traditional seasonal cycle.

Of course the seasonal cycle in egg prices is well known and is evident to the eye on any monthly chart of egg prices.

Egg prices are typically about 22% above the yearly average in October and about 13% below the yearly average in May of each year.

The 26.5-month cycle is almost as important as the seasonal cycle, averaging 17% above trend at time of crest. This cycle reached a peak in February of this year and is now on the way down to a bottom due ideally at March, 1959.

We combined these two cycles together with a smoothly rolling trend line to obtain the broken line on the chart below.

The net effect of adding the 26.5-month cycle to the seasonal pattern is to raise and lower the seasonal highs and lows.

As you can see, the seasonal low in early 1958 is higher than the seasonal low in early 1957. That is because of the peak in the 26.5-month cycle, which raises the seasonal bottom.

The solid line on the chart records the actual price of eggs for a short period in the past. The solid line (actual prices) compares favorably with the broken line (ideal prices) over the brief period shown.

This is because the two cycles we have isolated have dominated over this period. Apparently no random factors have appeared to disturb the smooth course of egg prices, and the other cycles which are undoubtedly present are well blended into the trend line we used.

How well the two lines will correspond in the future we cannot say because no one knows what course the actual price line will take.

The broken line accounts for only three factors — the two cycles (assuming the 26.5-month cycle is real and continues), and an estimated trend.

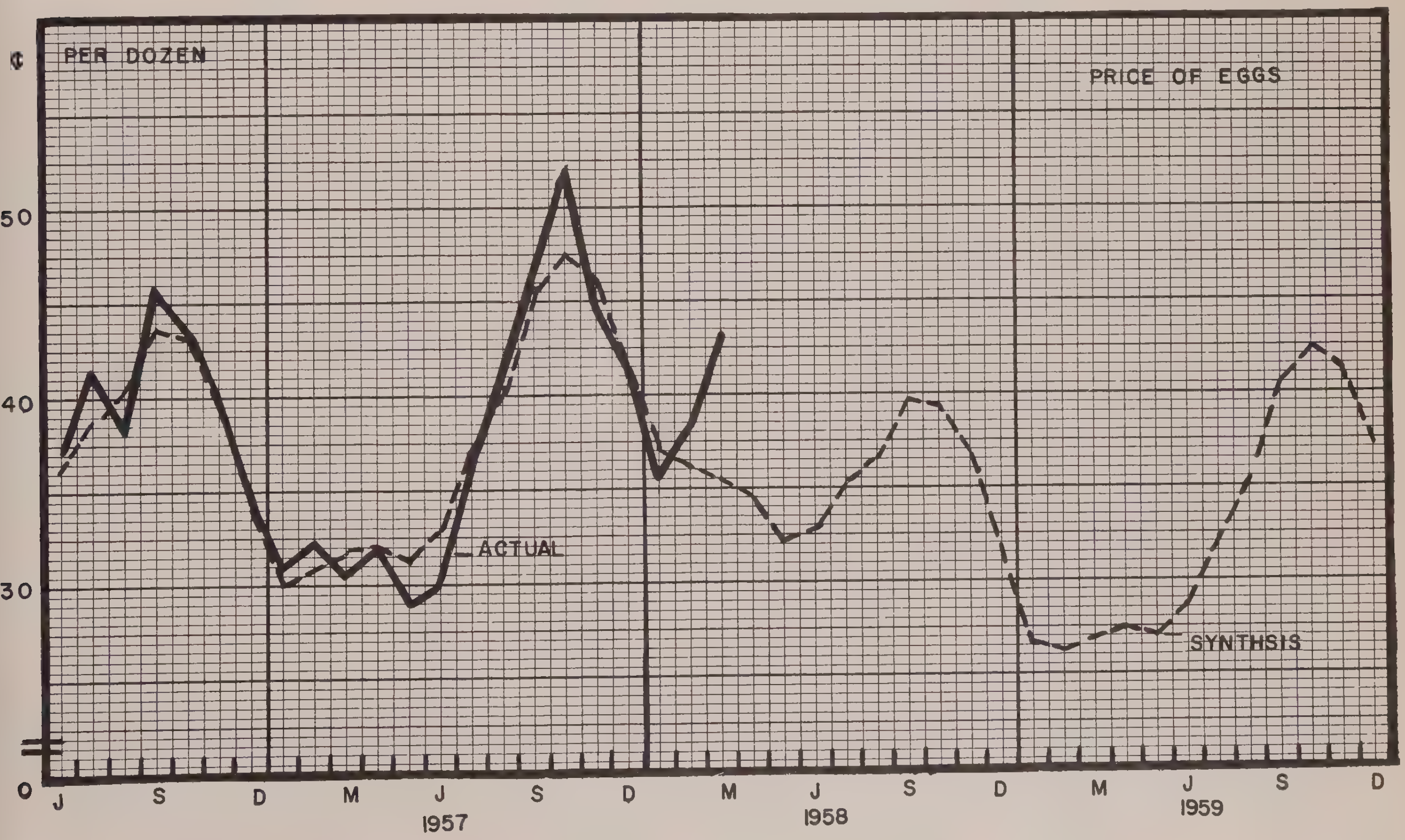
Although this line is extended into the future, this extension is of the two cycles and trend only. All the other cycles and the random factors that may cause a variation between the two lines are ignored.

Recent monthly prices of eggs, extras, wholesale, large, at Chicago, have been:

		Cents/Dozen
1957 -	May	29.0
	Oct.	52.3
1958 -	Jan.	35.5
	Feb.	38.2
	Mar.	43.4

For more detail on these cycles in egg prices see "What's Ahead for Egg Prices" in the April, 1958 issue of *Cycles*.

G. Shirk



FAILURES

The liabilities of business failures are one barometer of business health. When failures are small, business is pretty good. When failures are large, business is not so good.

A combination of five cycles and trend in the liabilities of failures is upward at the present time.

The work isolating the five cycles was done in 1953, and covered the period from 1857 forward.

If the cycles continue to prevail, and if our estimate of trend is correct, the odds are that the liabilities of commercial and industrial failures in 1958 will be considerably higher than in 1957.

The combination of cycles and trend is shown on the chart below by the dashed line.

As you can see, the comparison between the dashed line and the actual liabilities (solid line) is good except for the period of World War II, when business failures were practically nil.

A summary table on the cycles used follows:

Length in Years	% Above Trend at High	Date of Ideal High
3.42	15.9	1958.98
5.9	12.5	1955.70
6.5	14.3	1961.50
9.2	38.0	1959.50
17.67	51.0	1946.50

In addition to the cycles and the trend we also added an inflation factor to our projection.

Since these figures contain a large element of price it is necessary to include this factor in any projection.

When all these factors, cycles trend, and inflation, are combined, the resulting synthesis shows liabilities going up to 1961. Then the line turns down for three years to a low in 1964, after which it turns up again.

Such a projection must be qualified. We assume that the cycles we are using are real and will continue to dominate in the future as they have in the past, and we assume no disturbing factors, such as war.

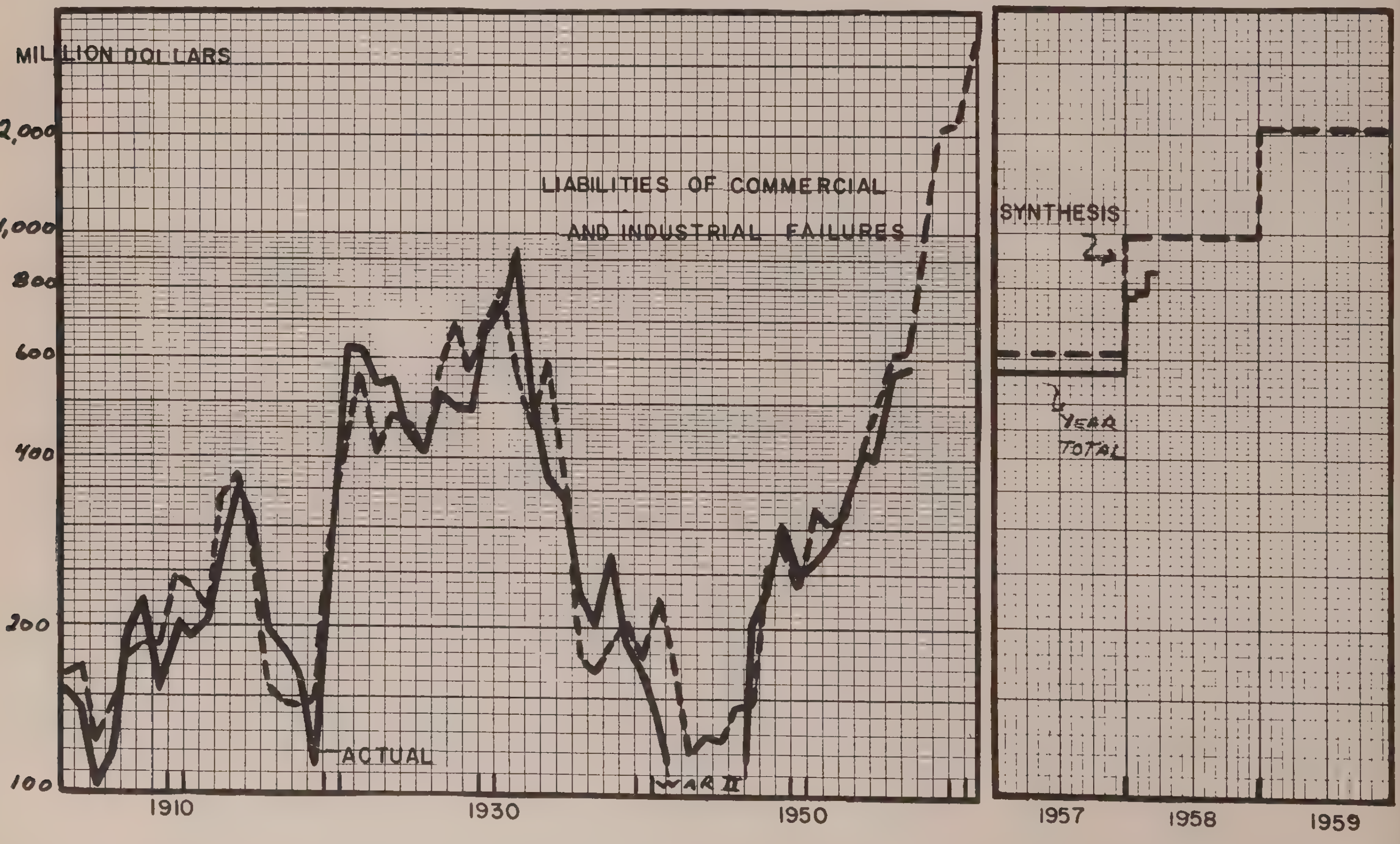
Recent monthly experience bears out our statement that the liabilities of failures may by higher in 1958 than in 1957.

The actual monthly figures for the first quarter of 1958 are:

Month	Liabilities
1958 - Jan.	$64,442,000
Feb.	65,295,000
Mar.	71,555,000

This gives a quarterly average of $67,097,000, which is an annual rate of $805 million. The 1957 yearly total was $571.8 million.

For further details regarding the study of cycles in failures refer to "Trend and Cycles of Business Failures," *Cycles*, May 1957, pp. 121-139. *G. S.*



COPPER PRICES

The combined cycles in copper prices when projected into the future are going up slightly to a peak in the second quarter of 1958 Then the combination turns down and continues down through the balance of 1958, 1959, and most of 1960.

We have isolated six separate cycles in copper prices, and five of these are used in the combination which is shown by the broken line on the chart.

The cycles are:

Length	% Above Trend At High	Date of Ideal High
32.36 mo.	2.33%	1958.4
8.6 yr.	11.9	1950.8
9.28 yr.	14.3	1956.0
12.53 yr.	8.4	1953.03
14.8 yr.	5.7	1960.7
54.0	39.	1971.75

The 54-year cycle has not been used in the combination, but it should be noted that it is now on the way up.

The trend we have used is level at 100%, but actually the trend of copper prices since 1784 is gradually downward.

The synthesis is not intended as a guide for the purchase and sale of copper. Forecasting involves many factors in addition to a knowledge of the cycles which are present in the figures.

But if you want to ignore all the random factors which also affect copper prices, and use the cycles alone for an academic exercise in the purchase and sale of copper, the result would be as follows for the period of time covered by the chart:

Buy at the second quarter, 1954, when the average price was 29.70 cents per pound.

Sell at the first quarter, 1956, when the average price was 45.02 cents per pound. The profit would have been 15.32 cents per pound, or about 51%.

Go short at the first quarter, 1956, at 45.02 cents per pound.

Cover at the second quarter, 1957, at 31.05 cents per pound. Profit would have been 13.97 cents per pound or 45%.

Buy at second quarter, 1957, at 31.05 cents per pound.

Sell at second quarter, 1958, at ? cents per pound.

It looks as though the last transaction would lose money. But even if the loss is 19 or 20%, the total result of all three transactions would be a net gain of 76 or 77%. On an actuarial basis our academic example worked.

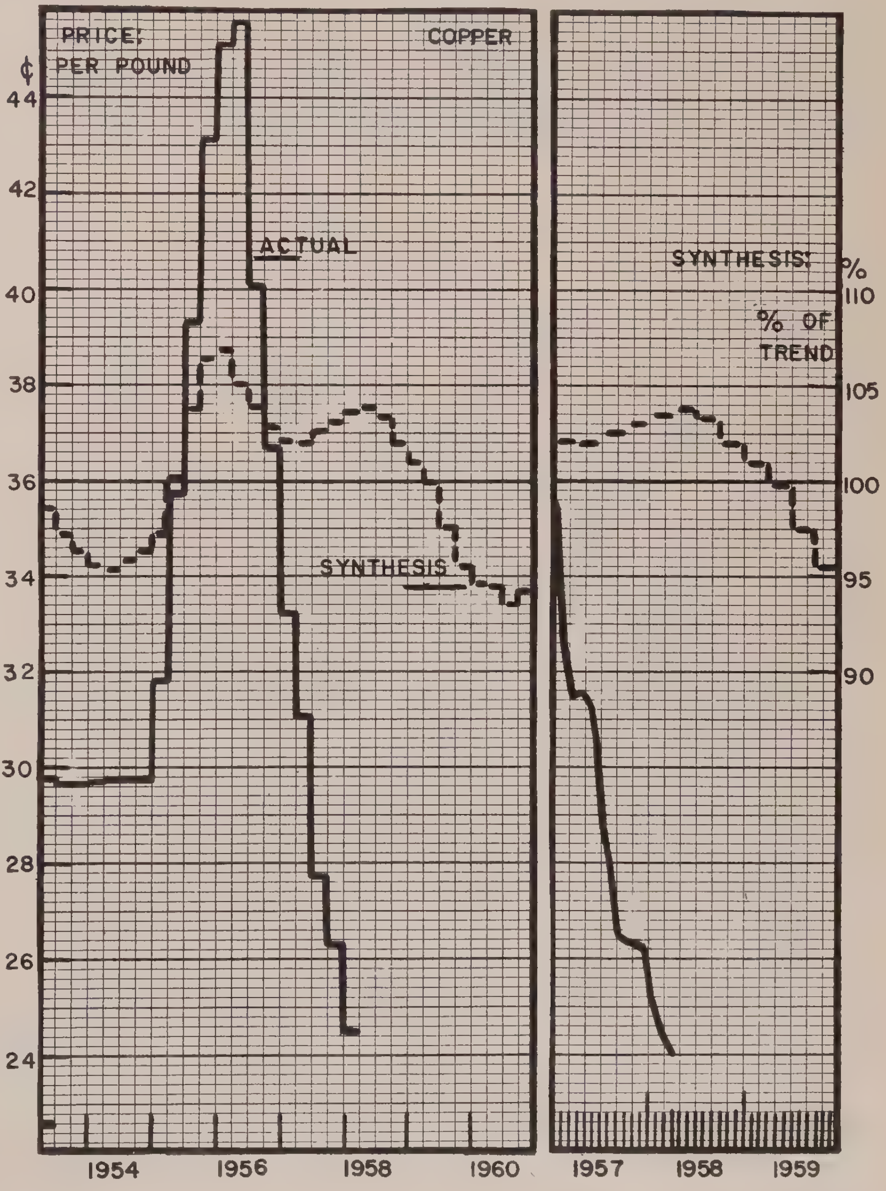
Remember, too, that we ignored *everything else*.

For instance, extremely large stocks in the hands of users in the second quarter of 1957 would have greatly affected an actual forecast of the prices. This would be a random factor in terms of cycle analysis, but could not be overlooked if one were forecasting copper prices

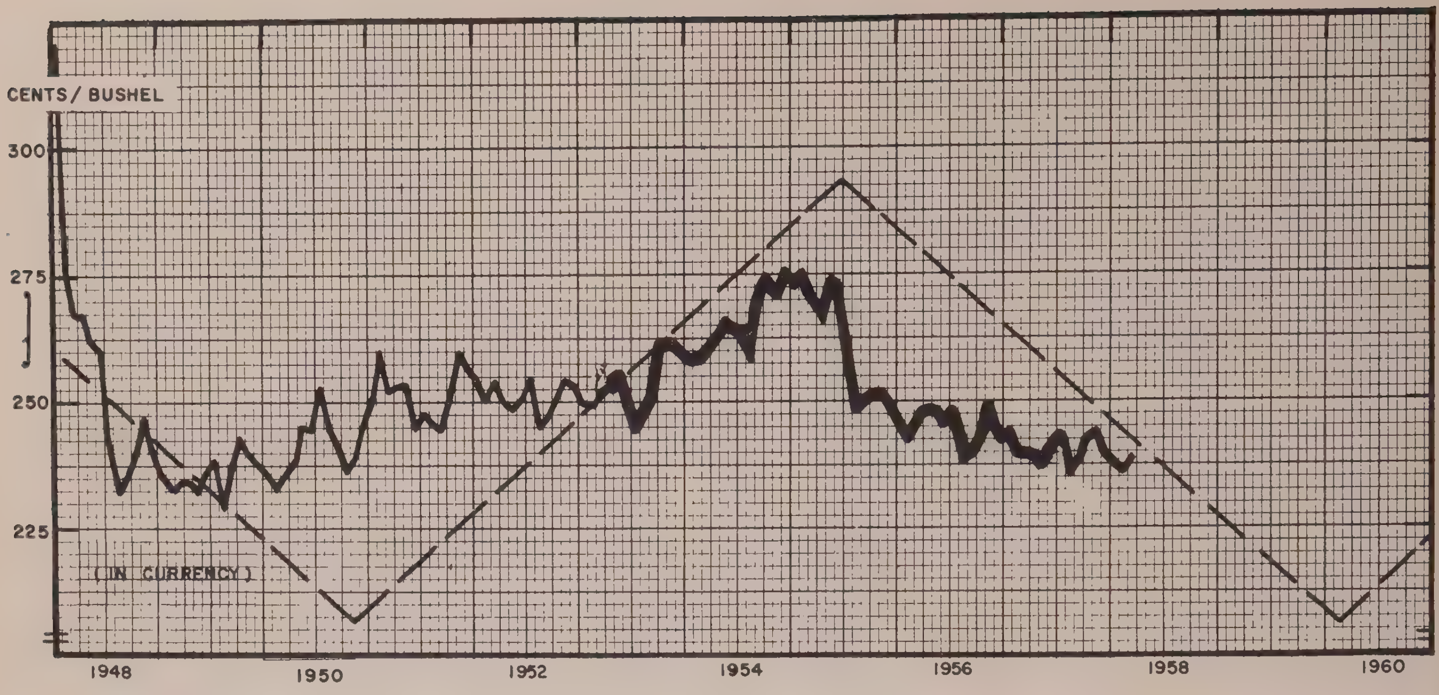
Actual prices of electrolytic copper at New York recently have been:

Month	Cents/Pound
1958 - Jan.	25.11
Feb.	24.40
Mar.	24.02

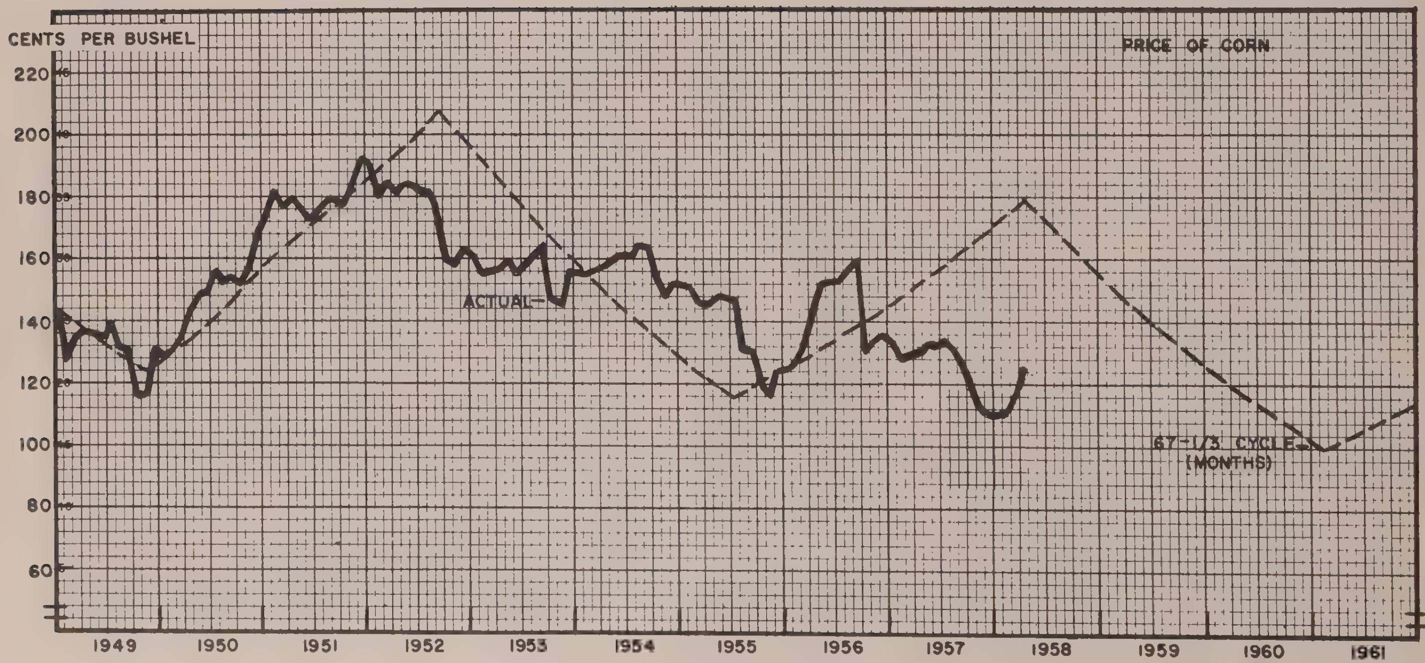
G. Shirk



WHEAT PRICES



CORN PRICES



Geisinger Indicator

BACKGROUND

The Modified Geisinger Indicator is a series of numbers which, in the past, have gone up and down ahead of corresponding movements of the Federal Reserve Board Index of Industrial Production. The Modified Geisinger Indicator thus throws some light on the probabilities of the future.

The F. R. B. Index of Industrial Production measures physical production in the U. S. A. It is a weighted average of tons, yards, gallons, and numbers of things produced each month.

The Modified Geisinger Indicator is the sum of two Indicators, the Geisinger Indicator and a First Difference Indicator.

The Geisinger Indicator was invented by Robert Geisinger. It is derived from figures which are published each month in the *Survey of Current Business*. It is charted for you as Curve A on pages 142 and 143.

Curve B on these same two pages charts the First Difference Indicator, which is merely the amount by which the smoothed F. R. B. Index is above or below the value for the preceding month. The smoothing is effected by means of a centered 3-month moving average posted to the second position.

Curve C charts the sum of the values of Curve A and B. This curve is called the Modified Geisinger Indicator. It suggests in a general way what the F. R. B. Index may do some eight months later.

Curve D charts the values of the F. R. B. Index of Industrial Production smoothed.

Curve E re-charts Curve C, advancing it by 8 months. This advance is for two reasons (1) so that you can more easily compare the past behavior of the Modified Geisinger Indicator with the behavior of the F. R. B. Index, and (2) so that you can have a better idea of what the F. R. B. Index may do in the future.

FORECAST

In March the Federal Reserve Board's seasonally adjusted Index of Industrial Production declined for the seventh straight month. The March Index was 128. In August, 1957 the Index was 145. This is a drop of 11.7% since last August.

The present set-back, as far as it has gone, is one of minor proportions. For perspective, remember that the 1937-38 decline was about four times as great. It seems to me the present set-back is being magnified and exploited for political reasons.

The 1st Difference Indicator for February was -2.66. This is up fractionally from the January 1st Difference Indicator. However, because the reported figures we use to compute the 1st Difference Indicator are rounded to whole numbers, the turn in the 1st Difference line may not be too significant.

The Geisinger Indicator for December 1957 (August 1958 when projected) turned upward from -4.2 in November to -3.6. This is the first hesitation in the down-trend of this line.

Although these are the first signs that the decline is lessening, they do *not* yet indicate that it will soon be over.

Continued caution is indicated.

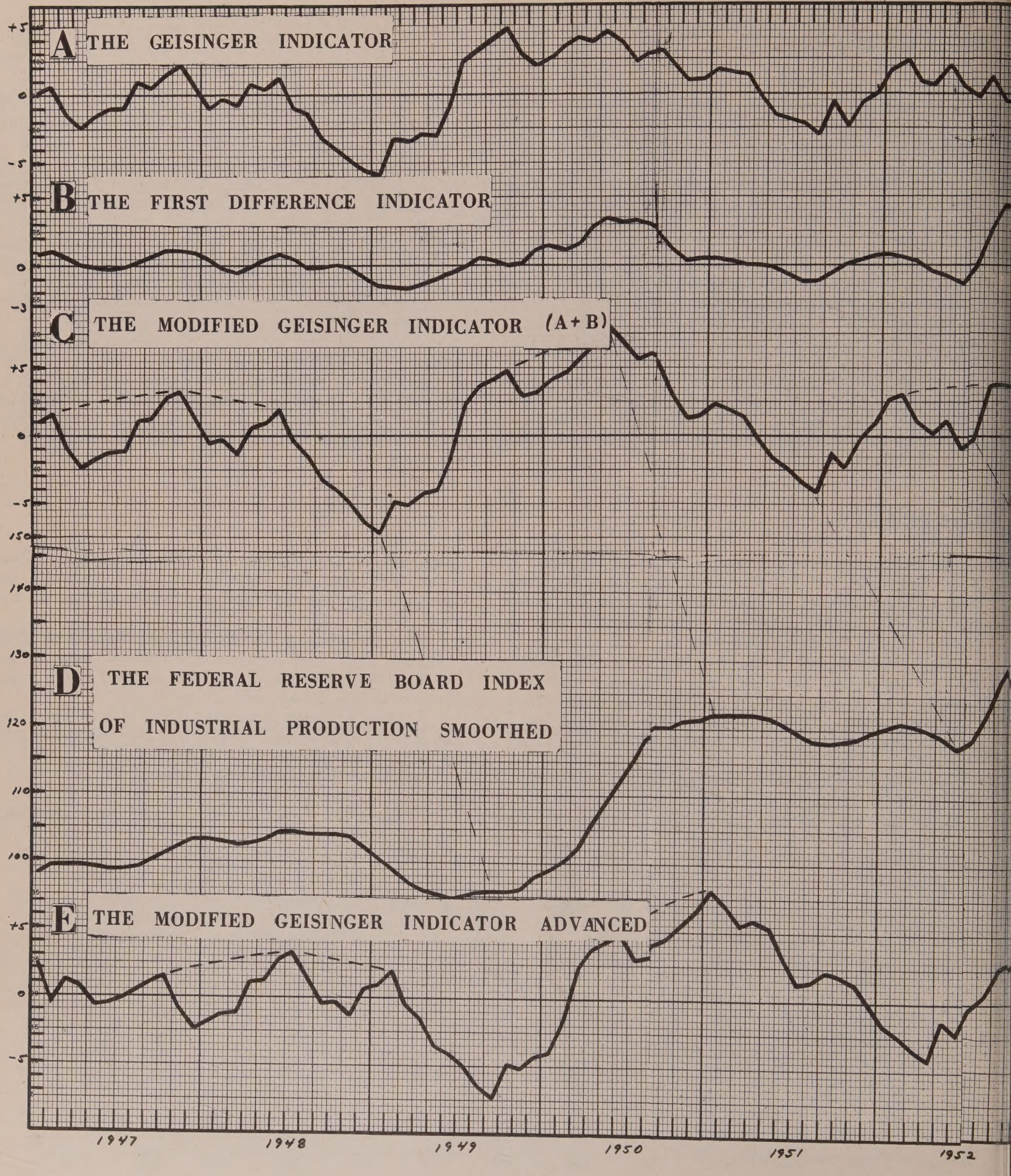
April 24, 1958 *Edward R. Dewey*

		Curve A	Curve B	Curve C	
Month	F.R.B. Index	Geisinger Indicator	1st Difference Indicator	Modified Geisinger Indicator	Timing Advanced 8 Months
Aug 1957	145	-0.6	0	-0.60	Apr. 1958
Sept. 1957	144	-1.4	-0.67	-2.07	May 1958
Oct. 1957	142	-3.4	-1.50	-4.90	June 1958
Nov. 1957	139	-4.2	-2.50	-6.70	July 1958
Dec. 1957	135	-3.6	-3.00	-6.60	Aug. 1958
Jan. 1958	133	(0 to -3.8)	-3.00	(-3.0 to -6.8)	Sept. 1958
Feb. 1958	130	(0.60 to -4.0)	-2.66p	(-2.06 to -6.66)	Oct. 1958
Mar. 1958	128p	*	*	*	Nov. 1958

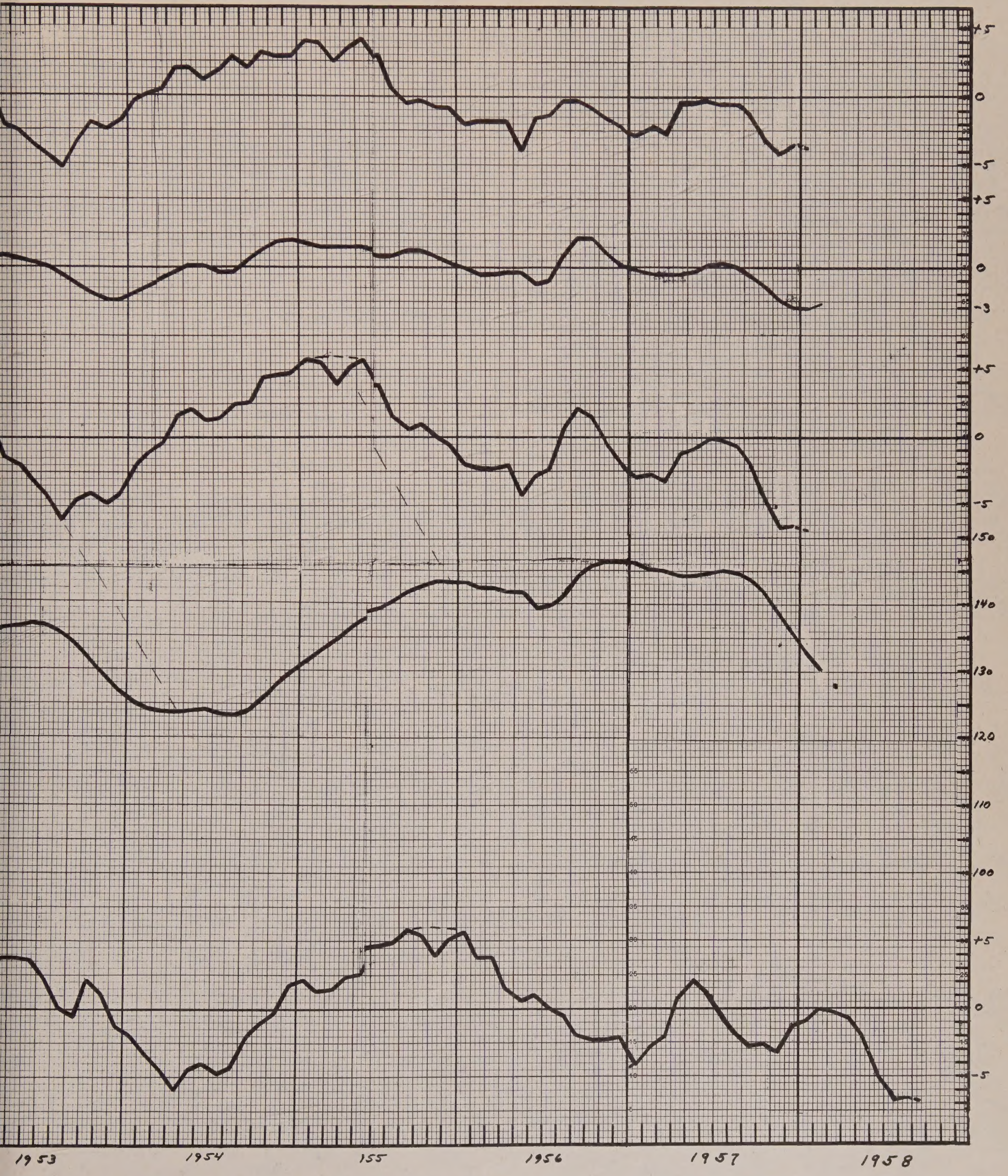
p - preliminary

* - not yet available

THE MODIFIED GEISINGER INDICATOR

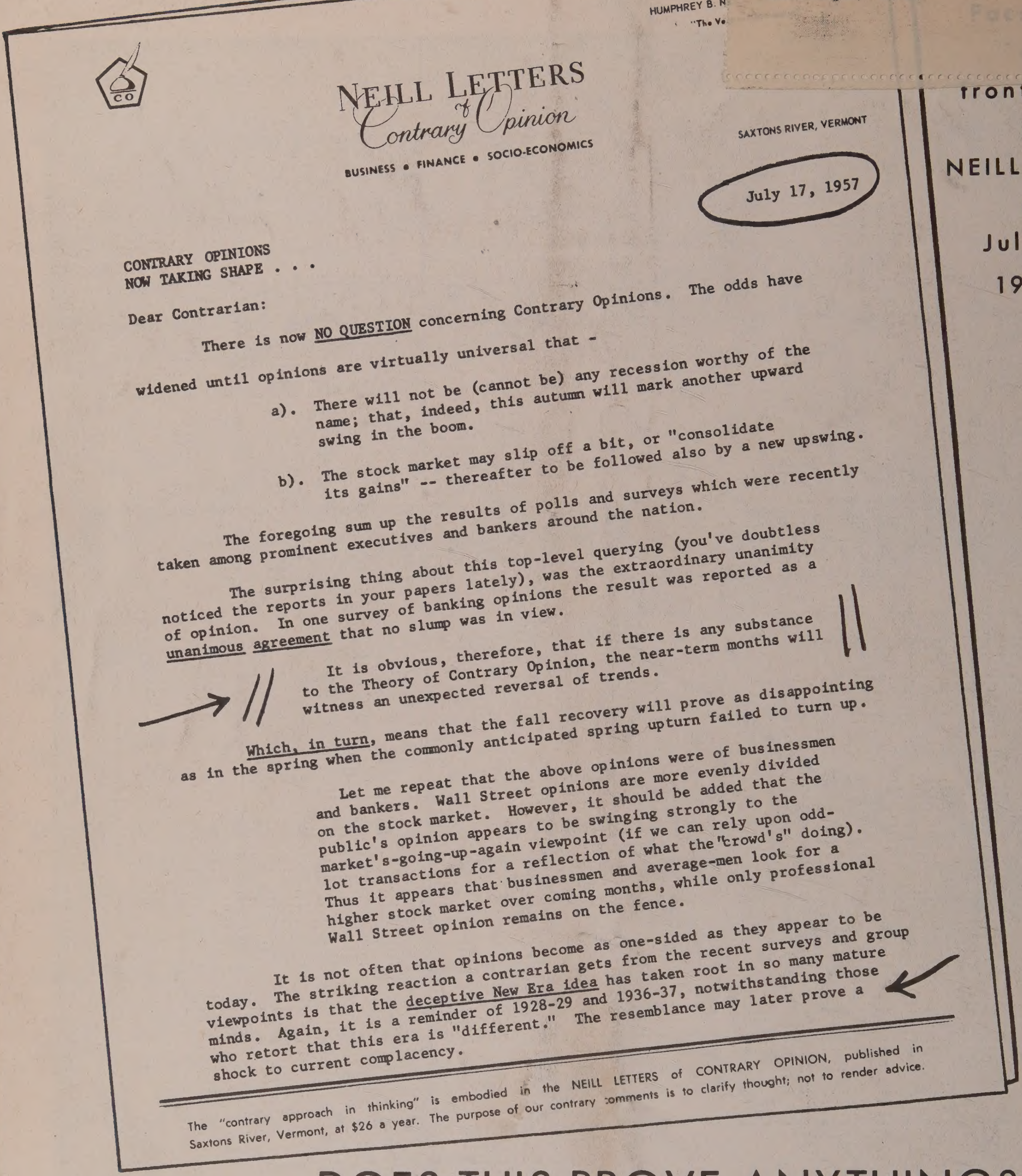


OF INDUSTRIAL PRODUCTION



Turn to page 141 for the forecast.

Mr. H. A. Musham
741 No. Rush St.
Chicago, Ill.



HUMPHREY B. N
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NEILL LETTERS of Contrary Opinion
BUSINESS • FINANCE • SOCIO-ECONOMICS

SAXTONS RIVER, VERMONT

July 17, 1957

CONTRARY OPINIONS
NOW TAKING SHAPE . . .

Dear Contrarian:

There is now NO QUESTION concerning Contrary Opinions. The odds have widened until opinions are virtually universal that -

a). There will not be (cannot be) any recession worthy of the name; that, indeed, this autumn will mark another upward swing in the boom.

b). The stock market may slip off a bit, or "consolidate its gains" -- thereafter to be followed also by a new upswing.

The foregoing sum up the results of polls and surveys which were recently taken among prominent executives and bankers around the nation.

The surprising thing about this top-level querying (you've doubtless noticed the reports in your papers lately), was the extraordinary unanimity of opinion. In one survey of banking opinions the result was reported as a unanimous agreement that no slump was in view.

It is obvious, therefore, that if there is any substance to the Theory of Contrary Opinion, the near-term months will witness an unexpected reversal of trends.

Which, in turn, means that the fall recovery will prove as disappointing as in the spring when the commonly anticipated spring upturn failed to turn up.

Let me repeat that the above opinions were of businessmen and bankers. Wall Street opinions are more evenly divided on the stock market. However, it should be added that the public's opinion appears to be swinging strongly to the market's-going-up-again viewpoint (if we can rely upon odd-lot transactions for a reflection of what the "crowd's" doing). Thus it appears that businessmen and average-men look for a higher stock market over coming months, while only professional Wall Street opinion remains on the fence.

It is not often that opinions become as one-sided as they appear to be today. The striking reaction a contrarian gets from the recent surveys and group viewpoints is that the deceptive New Era idea has taken root in so many mature minds. Again, it is a reminder of 1928-29 and 1936-37, notwithstanding those who retort that this era is "different." The resemblance may later prove a shock to current complacency.

The "contrary approach in thinking" is embodied in the NEILL LETTERS of CONTRARY OPINION, published in Saxtons River, Vermont, at $26 a year. The purpose of our contrary comments is to clarify thought; not to render advice.

Facsimile
of
front page
of
NEILL LETTER
of
July 17,
1957

DOES THIS PROVE ANYTHING?

We think it shows that the Theory of Contrary Opinion proves out in practice, when you consider the Boom's break-up and the stock market's drop. Obviously, one page of comment does not demonstrate fully what our Letters of Contrary Opinion aim to accomplish (which is to avoid the "crowd's" opinions and actions). For further demonstration and introduction may we send you our biweekly Letters for 20 weeks (10 Letters) at a nominal cost of $7.50, which will include Mr. Neill's 136-page book, "The Art of Contrary Thinking"? Address Neill Letters, Saxtons River, Vermont. *(N.B. - No stock market advice or investment counsel offered.)*